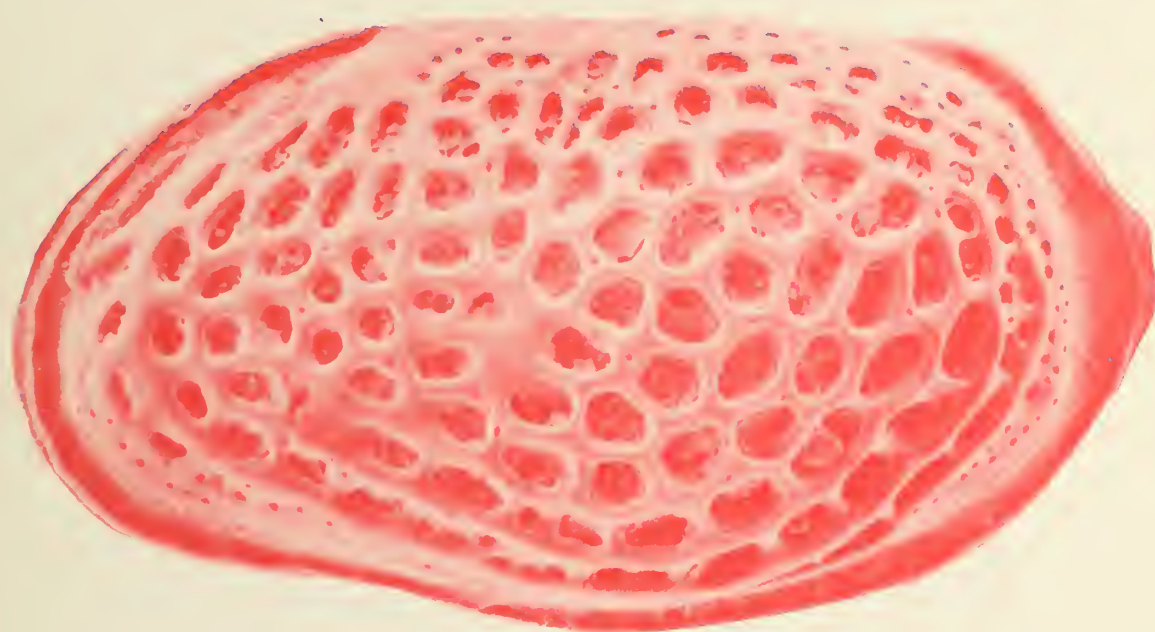
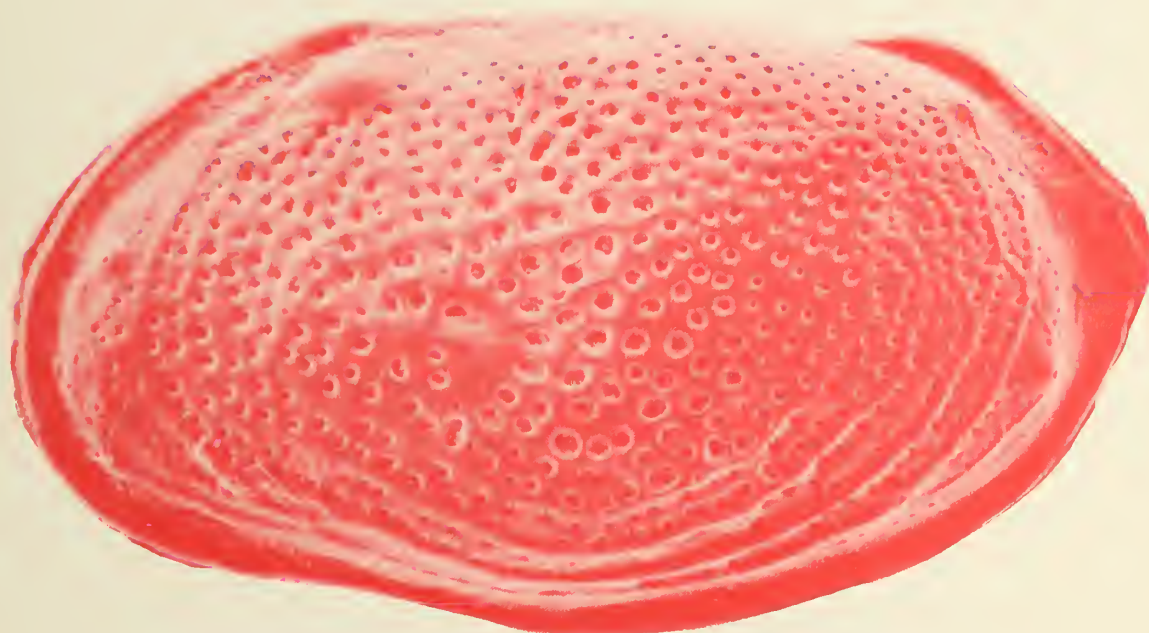


A Stereo-Atlas of Ostracod Shells

edited by J. Athersuch, D. J. Horne, D. J. Siveter,
and J. E. Whittaker



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Instructions to Authors

Contributions illustrated by scanning electron micrographs of Ostracoda in stereo-pairs are invited. Format should follow the style set by the papers in this issue. Descriptive matter apart from illustrations should be cut to a minimum; preferably each plate should be accompanied by only one page of text. Blanks to aid in mounting figures for plates may be obtained from any one of the Editors or Editorial Board. Completed papers should be sent to one of the Editors. All contributions submitted for possible publication in the *Stereo-Atlas of Ostracod Shells* are reviewed by an appropriate international specialist.

The front cover shows a male left valves of *Palmoconcha guttata* (Norman, 1865) "normal form" (upper) and "*granulata*" form of Sars, 1866 (lower). Both Recent, from off Sunderland, NE England and Isle of Bute, SW Scotland, respectively. Hancock Museum, Newcastle-upon-Tyne, nos. 1.20.14 and 1.20.15. Photographed by J.E. Whittaker.

ON *CYTHEROPTERON BYFIELDENSE* BOOMER & BODERGAT sp. nov.

by Ian Boomer & Anne-Marie Boderгат

(University of East Anglia, Norwich, England & Université Claude Bernard, Lyon, France)

Cytheropteron byfieldense sp. nov.1967 *Cytheropteron byfieldensis* (sic) sp. nov. R. A. Field, Unpublished Ph.D. Thesis Univ. of London, 226, pl. 23, figs. 1–12 (nom. nud.).*Holotype*. British Museum (Natural History) No. OS 13698; ♀ LV.*Type locality*: Middle Toarcian, Byfield, Northamptonshire, lat. 52° 12' N; long. 1° 20' W (Grid Ref. SP 4535 2564). The type level is equivalent to the lowest 15 cm of Bed A, Barnard, 1950 (*Q. Jl. geol. Soc. Lond.*, 106, 1–3) just above Lower Cephalopod bed.*Derivation of name*: With reference to the type locality.*Figured specimens*: British Museum (Natural History) numbers: OS 13695 (♂ LV: Pl. 19, 2, fig. 1), OS 13696 (♀ LV: Pl. 19, 2, fig. 2), OS 13697 (♀ RV: Pl. 19, 2, fig. 4), OS 13698 (♀ LV: Pl. 19, 4, fig. 1), OS 13699 (♀ car: Pl. 19, 4, fig. 2), OS 13700 (A-1 RV: Pl. 19, 4, fig. 3), OS 13701 (♀ RV: Pl. 19, 4, fig. 4), Université Claude Bernard, Lyon No. FSL 171058 (♀ RV: Pl. 19, 2, fig. 3).OS 13695, 13698, 13700 and 13701 from type locality and level; OS 13696, 13697 and 13699 from the *Hildoceras bifrons* Zone, Ilminster, Somerset, lat. 55° 55' 0" N, long. 2° 55' 0" W; FSL 171058 from the *Hildoceras bifrons* Zone, Penne, Quercy, France, lat. 44° 26' 24" N, long. 1° 44' 0" E.

Explanation of Plate 19, 2

Fig. 1, ♂ LV, ext. lat. (OS 13695, 545 µm long); fig. 2, ♀ LV, int. lat. (OS 13696, 510 µm long); fig. 3, ♀ LV, ext. lat. (FSL 171058, 460 µm long); fig. 4, ♀ RV, ext. lat. (OS 13697, 590 µm long).

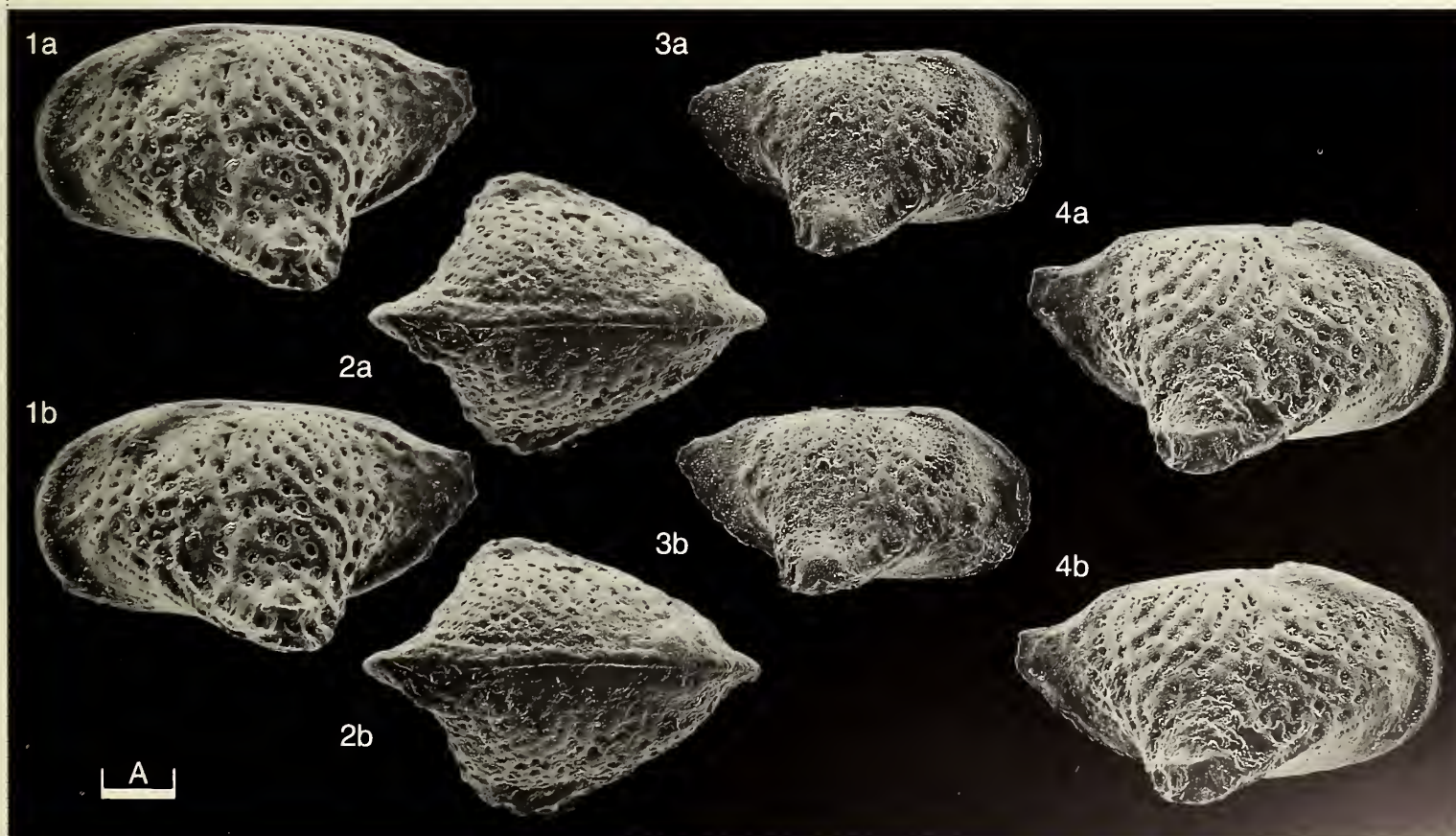
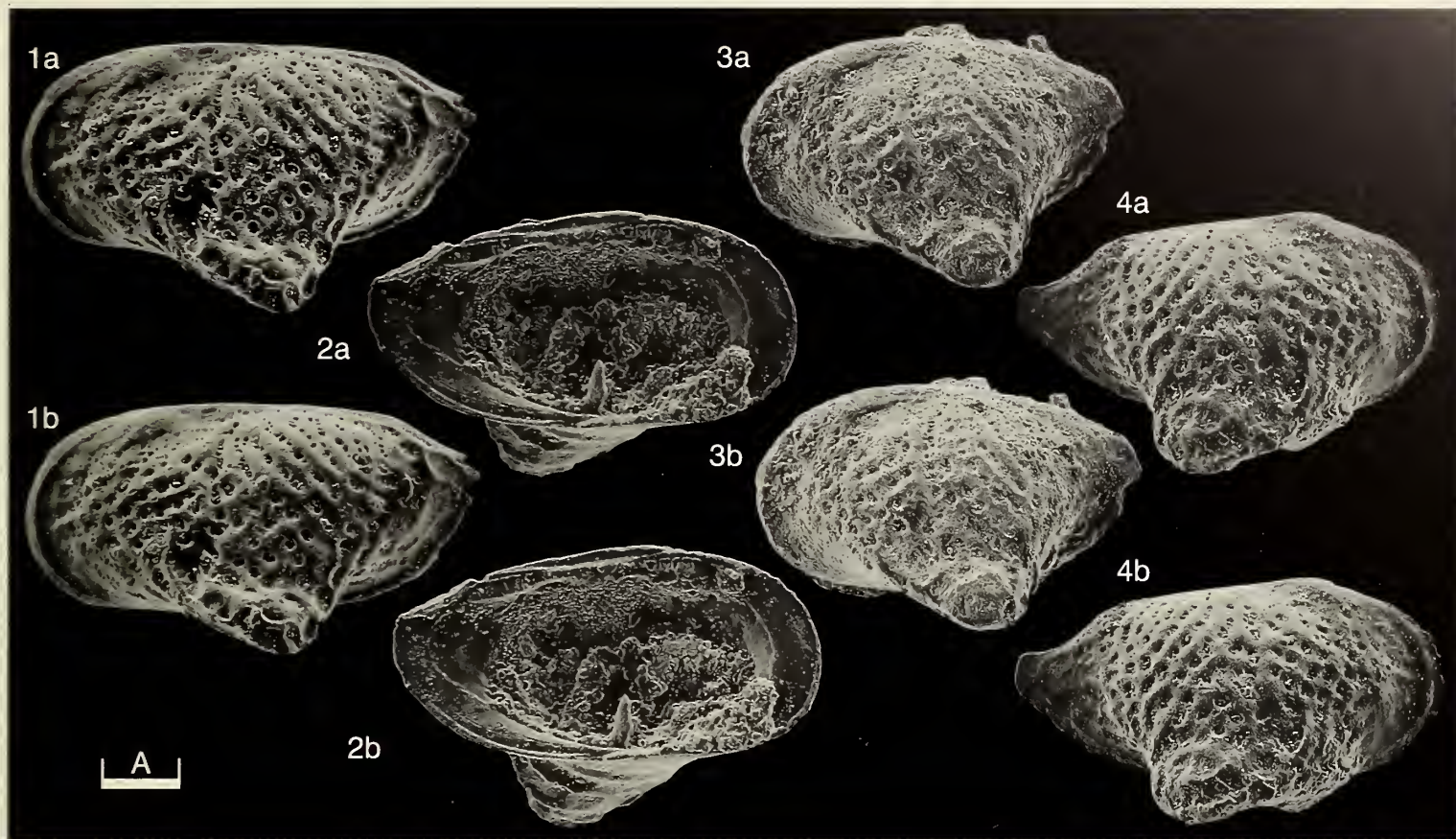
Scale A (100 µm; ×115), figs. 1–4.

Diagnosis: A species of *Cytheropteron* with robust carapace, rounded alate, lateral extensions and coarse, punctate ornament. Inner lamella moderate in width anteriorly and posteriorly, both bearing a narrow vestibule. Sexual dimorphism present.*Remarks*: This species is distinguished from the co-eval *C. alafastigatum* Fischer, 1962 (*Neues Jb. Geol. Paläont. Abh.*, 114, 336) by the more robust nature of the carapace shape together with more coarsely developed fossae on the carapace surface. The latter possesses fine surface punctation which never reaches the degree of excavation seen in the present material. *C. byfieldense* possesses rounded, rather than sharply terminating, lateral alae. The two species are, however, similar in many other respects and suggests that they are closely related. Juveniles of *byfieldense* and *alafastigatum* can be distinguished from each other, nevertheless.*Distribution*: Lower Jurassic. Present in the *Hildoceras bifrons* Zone of Ilminster and the Middle Toarcian of Byfield, Northants, England (Field, *op. cit.*), and in the Middle Toarcian of SW France. A few specimens have been recorded in the Upper Toarcian of the Mochras Borehole, Wales (Boomer, unpublished).

Explanation of Plate 19, 4

Fig. 1, ♀ LV, ext. lat. (OS 13698, 530 µm long); fig. 2, ♀ car., dorsal view (OS 13699, 480 µm long); fig. 3, A-1 RV, ext. lat. (OS 13700, 430 µm long); fig. 4, ♀ RV, ext. lat. (OS 13701, 510 µm long).

Scale A (100 µm; ×115), figs. 1–4.



ON *PEJONESIA SESTINA* (FLEMING)

by Ingelore C. U. Hinz
(University of Bonn, Germany)

Genus *PEJONESIA* gen. nov.

Type-species: *Mononotella sestina* Fleming, 1973

Derivation of name: In honour of Dr Peter Jones, Bureau of Mineral Resources, Canberra, Australia.

Diagnosis: Carapace equivalved, extremely elongate, subamplete to slightly postplete. Maximum length along dorsal margin. Valves not separated dorsally; anterior part of dorsal margin has sharp bend (where the two valves meet) that disappears mid-dorsally. Anterodorsal corner acute, posterodorsal corner slightly obtuse. From anterodorsal corner a lateral ridge bends obliquely and close to the dorsum and becomes obsolete in the central part of the valve. Free margin smooth and evenly developed, without marginal structure. Marginal rim extremely narrow, presence of doubleure doubtful. Carapace fairly compressed laterally, maximum convexity in dorsocentral area. Lateral surface smooth and even; shell substance unknown.

Remarks: The monotypic genus *Mononotella* Ulrich & Bassler, 1931 (*Proc. U.S. natn. Mus.*, 78(4), 91, 92), with its type-species *Primitia fusiformis* Matthew, 1895 (*Trans. N.Y. Acad. Sci.*, 14, 137), is characterised by a short hinge line, a beak-like anterior end and an extreme retral (posterior) swing, resulting in an approximately fusiform appearance in lateral view. Other species previously assigned to *Mononotella*, such as *M. marginia*, *M. ovata*, and *M. viviosa* Lee, 1975 (*Prof. Pap. Strat. Pal.*, 2, 37–72, Geol. Pub. Hse., Beijing), are herein thought to belong outside that genus. It is considered that the fusiform shape of *Mononotella fusiformis* and *Pejonesia sestina* has been achieved by the development of markedly different morphological characteristics: by a pronounced retral swing and by a long straight “hinge line” respectively. The only characteristic common to both genera is the acute anterodorsal corner.

The orientation of *Mononotella* is determined by its retral swing; in *Pejonesia*, by contrast, orientation is somewhat questionable. In this paper I follow Fleming (*Publs geol. Surv. Qd*, 356, 31, 1973), who defined the beak as at the anterior end in accordance with Ulrich & Bassler’s orientation (*op. cit.*, 1931). However, by comparison with certain post-Cambrian ostracods (e.g. *Acanthoscapha* Ulrich & Bassler, 1923; see *Treatise on Invertebrate Paleont.*, Pt Q, 208, 1961) the beak could be regarded as a directed process and thus being posterior.

There is superficial similarity in lateral shape between *Pejonesia sestina* and the Chinese lower Cambrian *Paradabashanella elongata* Shu, 1990 (*Cambrian and Lower Ordovician Bradoriida from Zhejiang, Hunan and Shaanxi Provinces*, 70, Northwest

Explanation of Plate 19, 6

Figs. 1–4, car. (holotype, CPC 19781, >2.17 mm long): fig. 1, ext. lt. lat.; fig. 2, ext. dors.; fig. 3, ext. vent.; fig. 4, ext. post.
Scale A (250 µm, ×35), figs. 1–3; scale B (250 µm, ×48), fig. 4.

Univ. Press). However, *Paradabashanella* does not apparently have an anterior beak; it does not appear to be present either in Shu’s reconstruction or in his photographs; indeed, the anterior side of *Paradabashanella* seems to be distinctly rounded. Furthermore, *Paradabashanella* lacks the typical ridge that borders the dorsum in *Pejonesia*. This feature occurs not only in the holotype but also on the other specimens of *Pejonesia* and thus cannot be regarded as accidental distortion of the carapace. Shu has “a lot of carapaces or valves” at his disposal and did not mention this feature as a characteristic of *Paradabashanella*; thus, it is considered as a distinguishing feature between the two genera.

Dabashanellids were described as univalved ostracods by Shu (*op. cit.*, 1990) and Melnikova (*In: Melnikova, L.M. & Mambetov, A.M., Paleont. Zh.*, 57–63, 1990), both of whom erected a new Order level taxon for this group. *Pejonesia*, too, lacks a defined “hinge”; nevertheless, I do not follow Shu’s and Melnikova’s concept because this development is regarded as an evolutionary trend rather than a feature for taxonomic differentiation at Ordinal level (Hinz, *Arch. Geschk.*, 2, 231–234, 1991).

In his 1990 paper Shu (*op. cit.*) stated that a primary phosphatic shell substance was characteristic of dabashanellids and included this feature in their diagnosis. *Pejonesia* clearly appears to be related to the later group of ostracods; however, as it comes from phosphorites (of the Georgina Basin), this fact excludes reliable statements about the true nature of the composition of its shell. Together with the uncertainty about the presence of a doubleure, this prevents a firm assignment of *Pejonesia* to either phosphatocopinid or bradorinid ostracods, two groups which have been separated at ordinal taxonomic level by Müller (*In: Bate, R.H., Robinson, E. & Sheppard, L.M. (eds.), Fossil and Recent Ostracods*, 276–304, 1982, Brit. Micropal. Ser.; Ellis Harwood, Chichester).

In *Paradabashanella* the presence of a multilayered shell points to the occurrence of secondary phosphatisation, as indeed does the presence (?) of what Shu (*op. cit.*) assumed were eggs in *Dabashanella* Shu. Notwithstanding such questions, it still remains unclear which features enabled Shu to differentiate taxa at the specific level.

Pejonesia sestina (Fleming, 1973)

- 1971 *Mononotella* sp. P.J.G. Fleming, *in: Hill, D., Payford, G. & Woods, J.T., Cambrian fossils of Queensland*, 28, pl. 14, figs. 2–4, Qd. Palaeontogr. Soc., Brisbane.
1973 *Mononotella sestina* sp. nov., P.J.G. Fleming, *Publs geol. Surv. Qd*, 356, 6, pl. 1, figs. 5–9, pl. 3, fig. 1, text-figs. A3–5.

Holotype: Commonwealth Palaeontological Collections, Bureau of Mineral Resources, Canberra, Australia (CPC), no. 19781; carapace.
Type locality: About 1.6 km N 20° E of Mt. Murray, on Chatsworth Station, Duchess phosphorite field, Queensland, Australia; approx. lat. 21° 47' S, long. 139° 59' E. This is Bureau of Mineral Resources locality D640, Monastery Creek Phosphorite Member, Beetle Creek Formation, Late Templetonian, middle Cambrian.

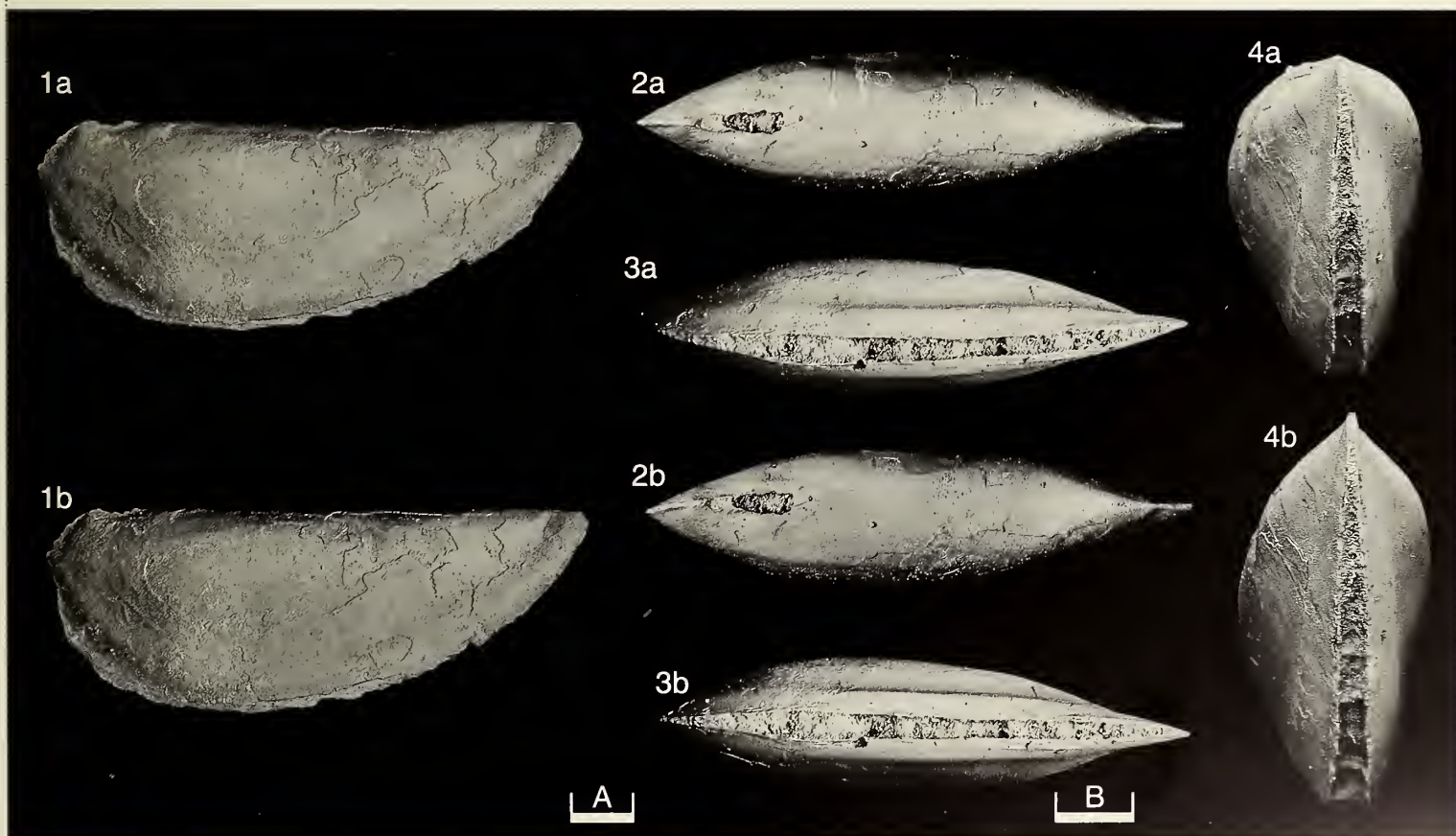
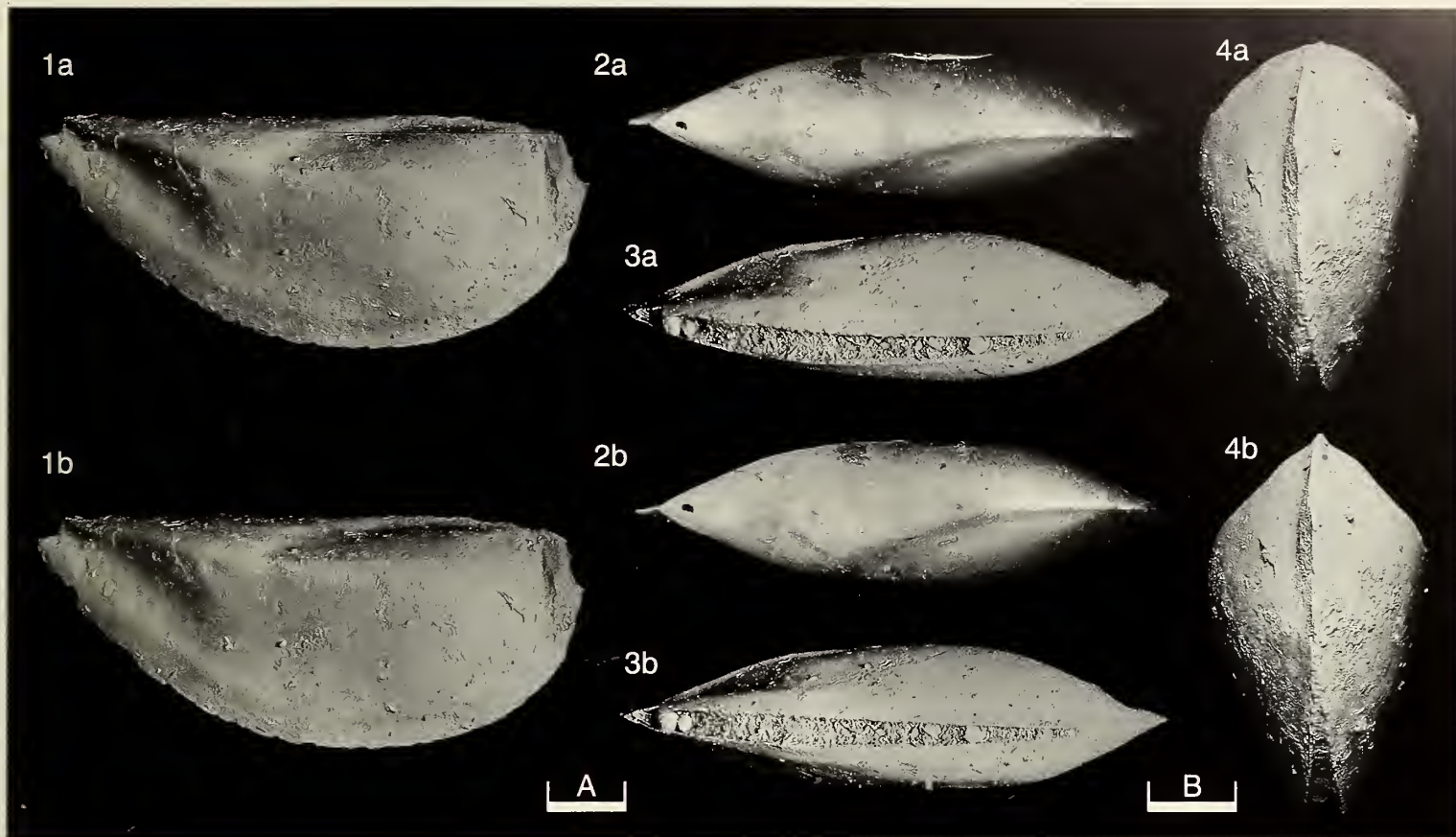
Figured specimens: Commonwealth Palaeontological Collections, Bureau of Mineral Resources, Canberra, Australia (CPC) nos. 19781 (holotype, car.: Pl. 19, 6, figs. 1–4), 23255 (car.: Pl. 19, 8, figs. 1–4). Both from the type locality.

Diagnosis: Species of *Pejonesia* up to 2.2 mm long. In other respects as for the genus; *Pejonesia* is currently monotypic.

Distribution: Known only from the middle Cambrian of the Duchess phosphorite field, Queensland, Australia.

Explanation of Plate 19, 8

Figs. 1–4, car. (paratype, CPC 23255, 2.1 mm long): fig. 1, ext. rt. lat.; fig. 2, ext. dors.; fig. 3 ext. vent.; fig. 4, ext. ant.
Scale A (250 µm, ×35), figs. 1–3; scale B (250 µm, ×42), fig. 4.



ON *TUBUPESTIS TUBER* HINZ & JONES gen. et sp. nov.

by Inglelore C. U. Hinz & Peter J. Jones
(University of Bonn, Germany & Bureau of Mineral Resources, Canberra, Australia)

Genus *TUBUPESTIS* gen. nov.

Type-species: *Tubupestis tuber* sp. nov.

Derivation of name: From Latin *tuber*, tubercle, and *pestis*, plague; fancied resemblance of the lateral surface. Gender, feminine.

Diagnosis: Hesslandonid with equivalved, amplete carapace. Outline approximately semicircular, with gentle retral (posterior) swing in larger instars. Maximum length within half of valve. "Hinge" lines straight. Interdorsum fairly broad, mostly parallel-sided, tuberculate; "hinge-lines" converge only over a short distance near antero- and posterodorsal corners, both of which have upwardly directed spines. Free margin evenly developed, with doublure on inner side. Distinct free marginal (= "adentral") area absent, but carapace is somewhat flattened in antero- and posterodorsal regions. Maximum convexity of valve occurs anterodorsally. "Lobation" consists of nodes of different sizes and shape. Most prominent nodes/nodal complexes are those situated anterodorsally (1–3 nodes) and centrodorsally. Ventrally and posteriorly smaller and more widely spaced nodes/tubercles are arranged in rows approximately parallel to ventral margin. Original shell composition probably phosphatic.

Remarks: *Tubupestis* possesses the characters of a typical hesslandonid (Phosphatocopina) with respect to its phosphatic shell, and the presence of an interdorsum and doublure. The interdorsum of *Tubupestis* has parallel borders over most of its length, unlike that of *Uloopsis* Hinz, 1991 (*Stereo-Atlas Ostracod Shells*, 18, 69–72) which has gently and continuously convex borders. *Tubupestis* displays several ontogenetic changes: in particular, its lateral outline, which is amplete and horizontally elongate in juvenile stages, gradually becomes purse-shaped with a slight retral swing; nodes/tubercles become coarser and may be present on the interdorsum. *Tubupestis* is distinct from all other known phosphatocopinids in the characteristic arrangement of its lateral nodes/tubercles.

Explanation of Plate 19, 10

Figs. 1, 2, car. (holotype, **CPC 23158**, 1.56 mm long): fig. 1, ext. rt. lat.; fig. 2, ext. dors. Fig. 3, incomplete, slightly compressed car., ext. lt. lat. (**CPC 23159** 1.46 mm long).

Scale A (250 μ m, $\times 42$), figs. 1, 2; scale B (250 μ m, $\times 45$), fig. 3.

Tubupestis shows superficial similarity to *Neoduibianella* Shu, 1990 (*Cambrian and Lower Ordovician Bradoriida from Zhejiang, Hunan and Shaanxi Provinces*, 54, Northwest Univ. Press), a Chinese genus which has distinct but (in contrast) irregularly arranged nodes on a reticulate surface. Well preserved specimens of *Tubupestis tuber* have a smooth outer surface, and occur together with other, definitely reticulate taxa.

We regard *Neoduibianella* as congeneric with *Duibianella* Shu (*op. cit.*, 52, 53): the outer surfaces of both taxa have a similar distribution of nodes and the absence in *Duibianella* of a similar microsculpture to that of *Neoduibianella* is probably due to poor preservation. As *Duibianella* has page priority, it is considered to be the senior synonym and the name we, as revising authors, prefer to use. Shu (*op. cit.*, 52) referred the Duibianellidae (a family introduced by him to include *Duibianella* and *Neoduibianella*) to the Beyrichonacea Ulrich & Bassler 1931. By doing this, he thus implied that hesslandonid characters, such as a doublure and an interdorsum, are not found in the Duibianellidae.

Tubupestis tuber sp. nov.

1980 New pustulose genus, P.J. Jones & K.G. McKenzie, *Alcheringa*, 4, 205.

Derivation of name: From Latin *tuber*, a tubercle; referring to the tuberculate outer surface of the valve.

Holotype: Commonwealth Palaeontological Collections, Bureau of Mineral Resources, Canberra, Australia (CPC) no **23158**; carapace.

Type locality: About 1.6 km N 20° E of Mount Murray, on Chatsworth Station, Duchess phosphorite field, Queensland, Australia; approximately lat. 21° 47' S, long. 139° 59' E. This is Bureau of Mineral Resources locality D640. Monastery Creek Phosphorite Member, Beetle Creek Formation; *Ptychagnostus gibbus* Zone, later Templetonian, middle Cambrian.

Figured specimens: Commonwealth Palaeontological Collections, Bureau of Mineral Resources, Canberra, Australia (CPC) nos. **23158** (holotype, car.: Pl. 19, 10, figs. 1, 2; Pl. 19, 12, figs. 1, 2), **23159** (incomplete car.: Pl. 19, 10, fig. 3), **23160** (car.: Pl. 19, 12, fig. 3), **23161** (RV: Pl. 19, 12, fig. 4). All of the figured specimens are from the type locality.

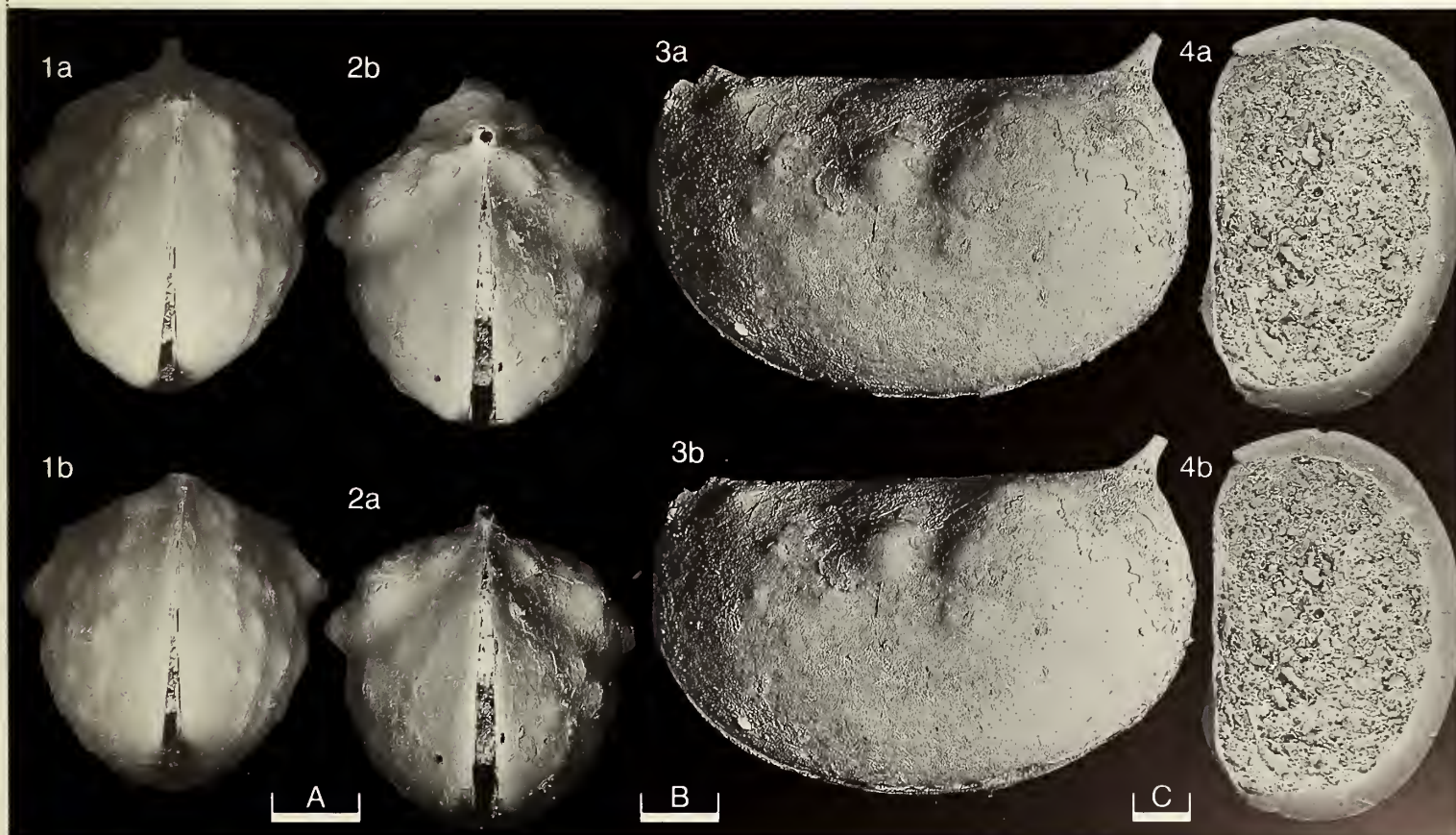
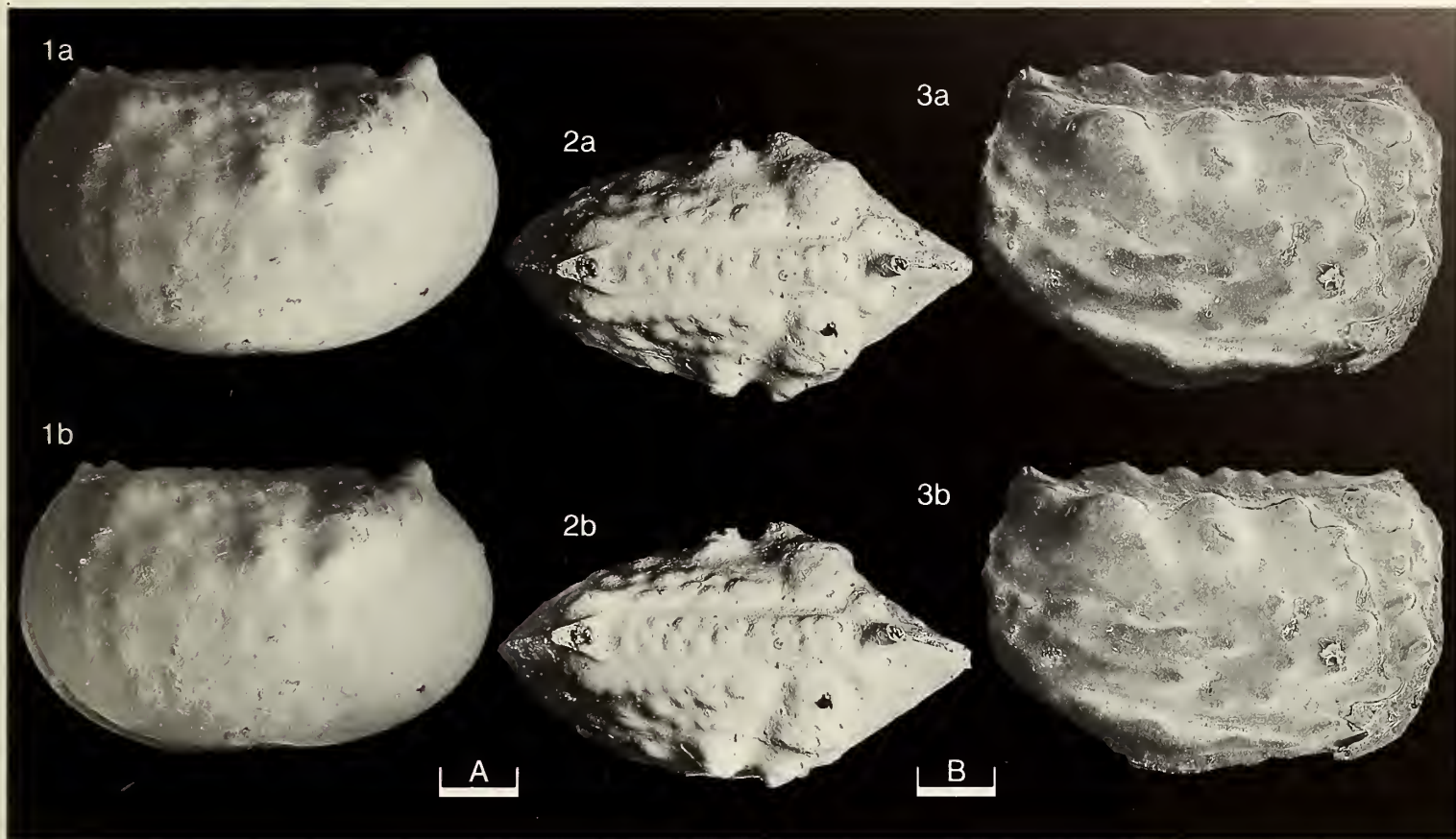
Diagnosis: Species of *Tubupestis* up to 2.6 mm in length. In other respects as for the genus; *Tubupestis* is currently monotypic.

Distribution: Known only from two early middle Cambrian localities of the type region, Duchess (4-mile geological series sheet F/54-6), Queensland, Australia. Unfigured specimens (**CPC 19744–19746**), also from BMR locality D640 (= locality L113 of Queensland Museum), were listed by Jones & MacKenzie (1980, *op. cit.*, 205) as "a new pustulose genus".

Explanation of Plate 19, 12

Figs. 1, 2, car. (holotype, **CPC 23158**, 1.56 mm long): fig. 1, ext. post.; fig. 2, ext. ant. Fig. 3, car. ext. rt. lat. (**CPC 23160**, 0.73 mm long). Fig. 4, RV, int. lat. (**CPC 23161**, 0.79 mm long).

Scale A (100 μ m, $\times 46$), figs. 1, 2; scale B (100 μ m, $\times 102$), fig. 3; scale C (100 μ m, $\times 70$), fig. 4.



ON *SEMILLIA PAUPER* HINZ gen. et sp. nov.

by Ingelore C. U. Hinz
(University of Bonn, Germany)

Genus *SEMILLIA* gen. nov.

Type-species: *Semillia pauper* sp. nov.

Derivation of name: From Latin *semi-* and *elliptica*; with reference to the shape of the valves in lateral view. Gender, feminine.
Diagnosis: Phosphatocopinid, carapace semielliptical, subamplete. Dorsal margin in lateral view straight, except for slightly raised cardinal corners. Maximum length of valves at dorsal margin. Interdorsum very broad, with parallel edges that converge only near cardinal corners, both of which have upwardly directed processes. Width of interdorsum about one-third of entire width of carapace. Maximum convexity of carapace occurs just behind mid-length. Free margin evenly developed, distinct marginal (= "adventral") area lacking. Valves with narrow doubleure. Four extremely weak nodes occur in the anterior half of the dorsal part of the valve. Lateral surface of valve smooth.

Remarks: The ventral morphology of the closed carapace of the paratype (Pl. 19, 16, fig. 3) is quite different from that of the holotype (Pl. 19, 14, fig. 3). The paratype shows some sort of overlapping of the right valve by the left valve in the anteroventral portion of the carapace, behind which there is a distinct gap between the two valves. The ventral margin of the right valve of the paratype is slightly damaged, but not to such an extent as to explain the distinct gap. Both holotype and paratype come from the same sample, are comparatively large (length: 2.6 mm and 2.3 mm respectively) and, except for their ventral development, they agree in all available characters. It is presently uncertain whether these ventral differences represent a possible case of sexual dimorphism within a single species or whether they reflect different species. It is preferred to regard the specimens as one species until further studies, based on a much larger amount of material, indicate otherwise.

With its faintly nodose dorsal part of the valve, *Semillia* is similar to the middle Cambrian *Hesslandona trituberculata* Gründel (Freiberger ForschHft., C363, 57–73, 1981), which is characterised by three dorsal nodes. However, that species differs from *Semillia* in the number and arrangement of its nodes (with the third node being in the posterodorsal field) and by the development of its cardinal spines. *H. trituberculata* has a short, almost vertical anterior cardinal spine and a posterior cardinal spine which is

Explanation of Plate 19, 14

Figs. 1–4, car. (holotype, CPC 23253, 2.6 mm long): fig. 1, ext. lt. lat.; fig. 2, ext. dors.; fig. 3, ext. vent.; fig. 4, ext. ant.
Scale A (250 µm, ×33), fig. 1; scale B (500 µm, ×25), figs. 2, 3; scale C (250 µm, ×44), fig. 4.

large and broadly curved towards the posterior. Such differentiation in the cardinal regions is not present in *Semillia*. Furthermore, the general outline of the valve in lateral view differs between the two taxa.

According to Müller (Neues Jb. Geol. Paläont. Abh., 121, 22, 1964), adult stages of the upper Cambrian *Hesslandona necopina* are characterised by having three nodes. However, it should be noted that Müller documented this species exclusively from what I regard to be larval stages, specimens whose maximum length is slightly greater than 1 mm. Indeed, the holotype of *Hesslandona necopina* (Müller, op. cit., Pl. 1, fig. 6) is comparatively small (only about 0.5 mm long) and lacks any sculpture. Furthermore, all but one of Müller's illustrated specimens come from the *Olenus* Zone; his largest specimen, which has nodes (Müller, op. cit., Pl. 1, fig. 2), was discovered from the much younger *Peltura* Zone and the conspecific nature of this specimen and the other specimens of *H. necopina* is rather questionable. Differences between this largest specimen of supposed *H. "necopina"* (Müller, op. cit., Pl. 1, fig. 2) and *Semillia* include the number and distribution of nodes and the morphology of the free margin. In *H. "necopina"* the nodes are not in a line (the third node lies in the posterodorsal field, as in *H. trituberculata*) and the posteroventral margin is distinctly recessed. By contrast, in *Semillia* the nodes are restricted to the anterior half of the dorsal region and the free margin is evenly curved.

Contrary to both the *H. "necopina"* specimen mentioned above and *H. trituberculata*, *Semillia pauper* has an extremely broad interdorsum, in which the valves themselves are incorporated at converging ends. As a consequence of this design, closure of the valves in *Semillia* inevitably resulted in a raising up of the dorsal ends of the valves; by contrast, opening of the carapace made the cardinal corners dip lower (Hinz, in press). In *Hesslandona*, the parallel edges of the interdorsum can be traced from the anterior to the posterior end of the carapace (In: Schram, F. R., *Crustacean phylogeny*, fig. 1A, 1981, Balkema, Rotterdam); with such an architecture, movements of the valves have much less effect on the flexibility of the dorsal area.

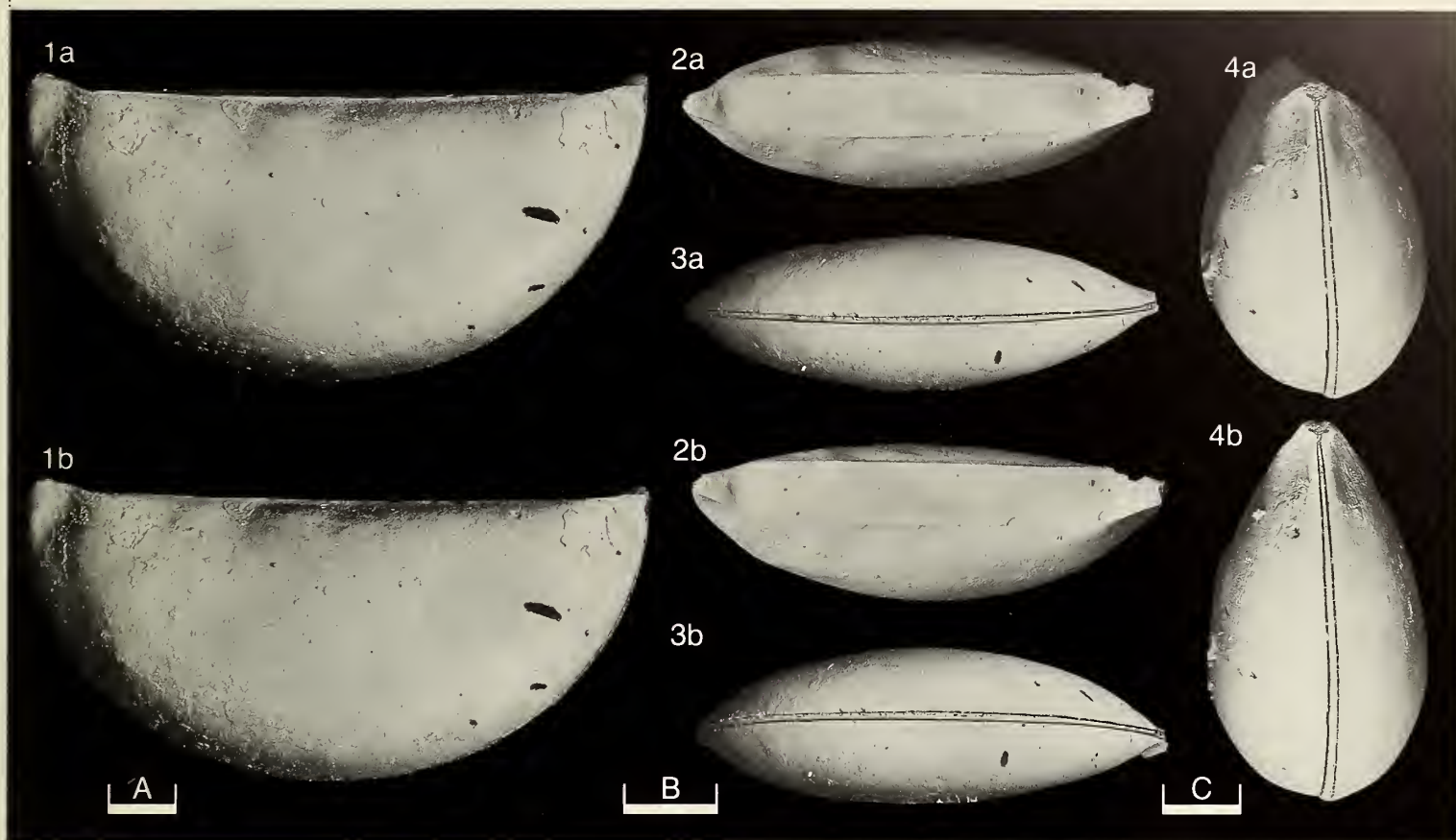
Semillia pauper sp. nov.

Derivation of name: From Latin, *pauper*, poor; referring to the smooth outer surface of the valves.
Holotype: Commonwealth Palaeontological Collections, Bureau of Mineral Resources, Canberra, Australia (CPC) no. 23253; carapace.
Type locality: 500 m S of the telegraph line, Rogers Ridge, Duchess Region, Queensland, Australia; approximately lat. 21°45.4'S, long. 139°58.8'E. Monastery Creek Phosphorite Member, Beetle Creek Formation; late Templetonian, middle Cambrian; with *Xystridura*.
Figured specimens: Commonwealth Palaeontological Collections, Bureau of Mineral Resources, Canberra, Australia (CPC) nos. 23253 (holotype, car.: Pl. 19, 14, figs. 1–4), 23252 (car.: Pl. 19, 16, figs. 1–3), 23251 (LV: Pl. 19, 16, fig. 4). Both from the type locality.
Diagnosis: Up to 3.2 mm long. In other respects as for the genus; *Semillia* is currently monotypic.
Distribution: Known only from type locality.

Explanation of Plate 19, 16

Figs. 1–3, car. (paratype, CPC 23252, 2.3 mm long): fig. 1, ext. lt. lat.; fig. 2, ext. dors.; fig. 3, ext. vent. Fig. 4, LV, int. lat. (CPC 2325, 1.9 mm long).

Scale A (500 µm, ×23), figs. 1–3; scale B (500 µm, ×27), fig. 4.



ON *CUNEOCERATINA EXORNATA* (HERRIG)

by Ekkehard Herrig
(University of Greifswald, Germany)

Cuneoceratina exornata (Herrig, 1966)

1966 *Monoceratina* (sgen. nov. ? 1) *exornata* sp. nov. E. Herrig, *Paläont. Abh. Berl.*, A, 2, 4, 909, pl. 40, figs. 1, 2, text-fig. 118d.

Holotype: Fachrichtung Geowissenschaften, Ernst-Moritz-Arndt-Universität, Greifswald, Germany, no. **GPIG Os 87**.

Type locality: Uppermost section of the chalk complex no. 14, sample no. 3/103, beach at Jasmund, Isle of Rügen, Baltic Sea; lat. 54° 33' N, long. 13° 40' E. Upper part of lower Maastrichtian, upper Cretaceous.

Figured specimens: Fachrichtung Geowissenschaften, University of Greifswald, Germany (GPIG), nos. **5291/1** (LV: Pl. 19, 18, fig. 1), **5291/2** (RV: Pl. 19, 18, fig. 2; Pl. 19, 20, fig. 3), **16591/1** (RV: Pl. 19, 20, fig. 2) and **16591/2** (anteroventrally incomplete RV: Pl. 19, 20, fig. 1).

Specimens **5291/1**, and **5291/2** are from flint erratic boulder no. **La 6/11/89**. Specimens **16591/1** and **16591/2** are from flint erratic boulder “Wieck grau”. Both erratic boulders are from “Adler Grund”, off SW part of Isle of Bornholm (Baltic Sea), Denmark; upper Maastrichtian, Cretaceous.

Explanation of Plate 19, 18

Fig. 1, LV ext. lat. (**5291/1**, 1.12 mm long, including spines); fig. 2, RV ext. lat. (**5291/2**, 1.02 mm long, most spines are broken). Scale A (100 µm, ×70), fig. 1; scale B (100 µm, ×83), fig. 2.

Diagnosis: *Cuneoceratina* species with valves more than 1 mm long; rhomboid outline, reticulate shell surface, long lateral spine posteroventrally covered by tiny denticles. Marginal ridges with lines of spines: anteriorly, ventrally and one line on dorsal ridge. On shell reticulation, spines are scarce and scattered; dense below deepened muscle scar field where (ventrocentrally) they form a line.

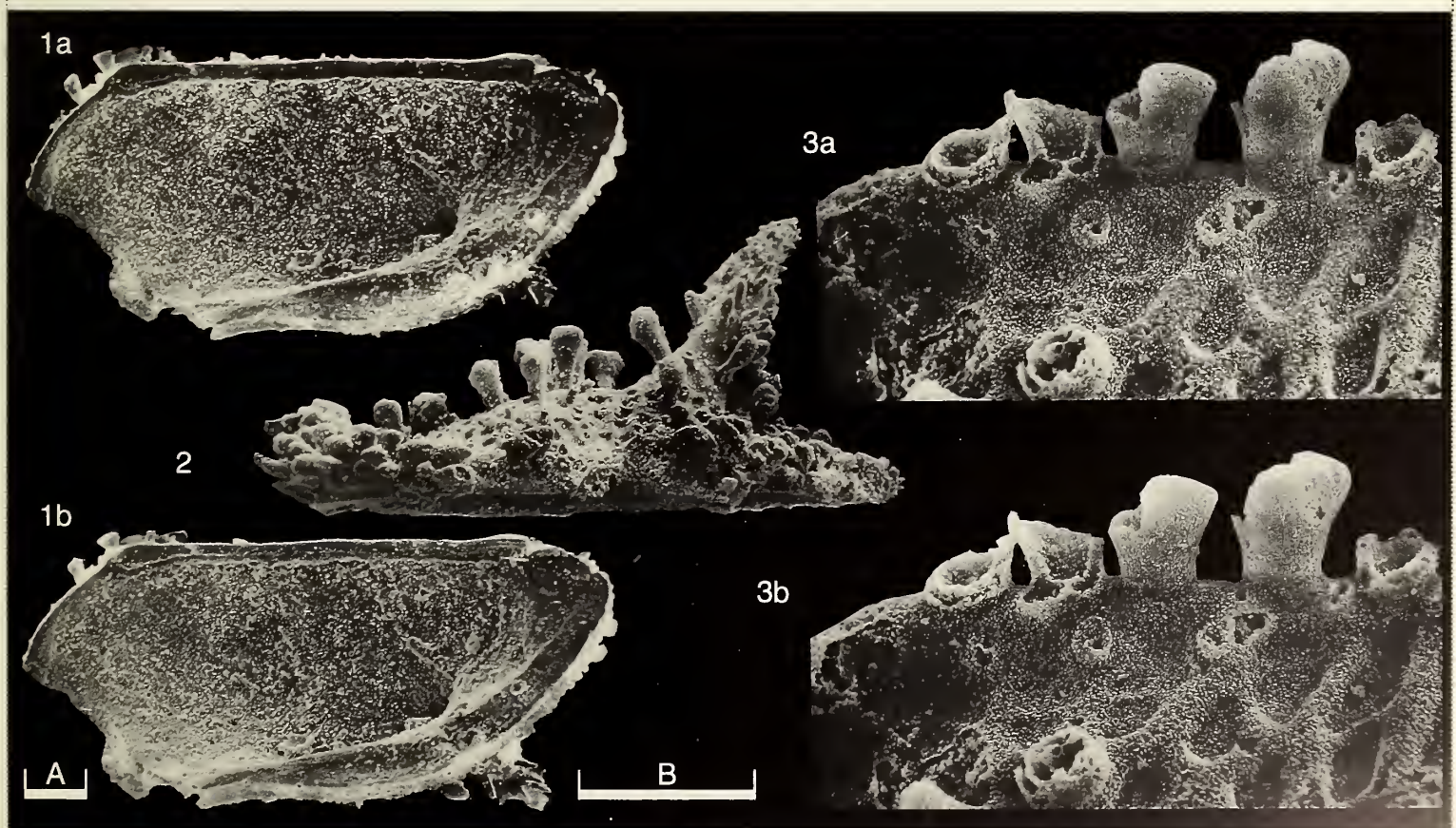
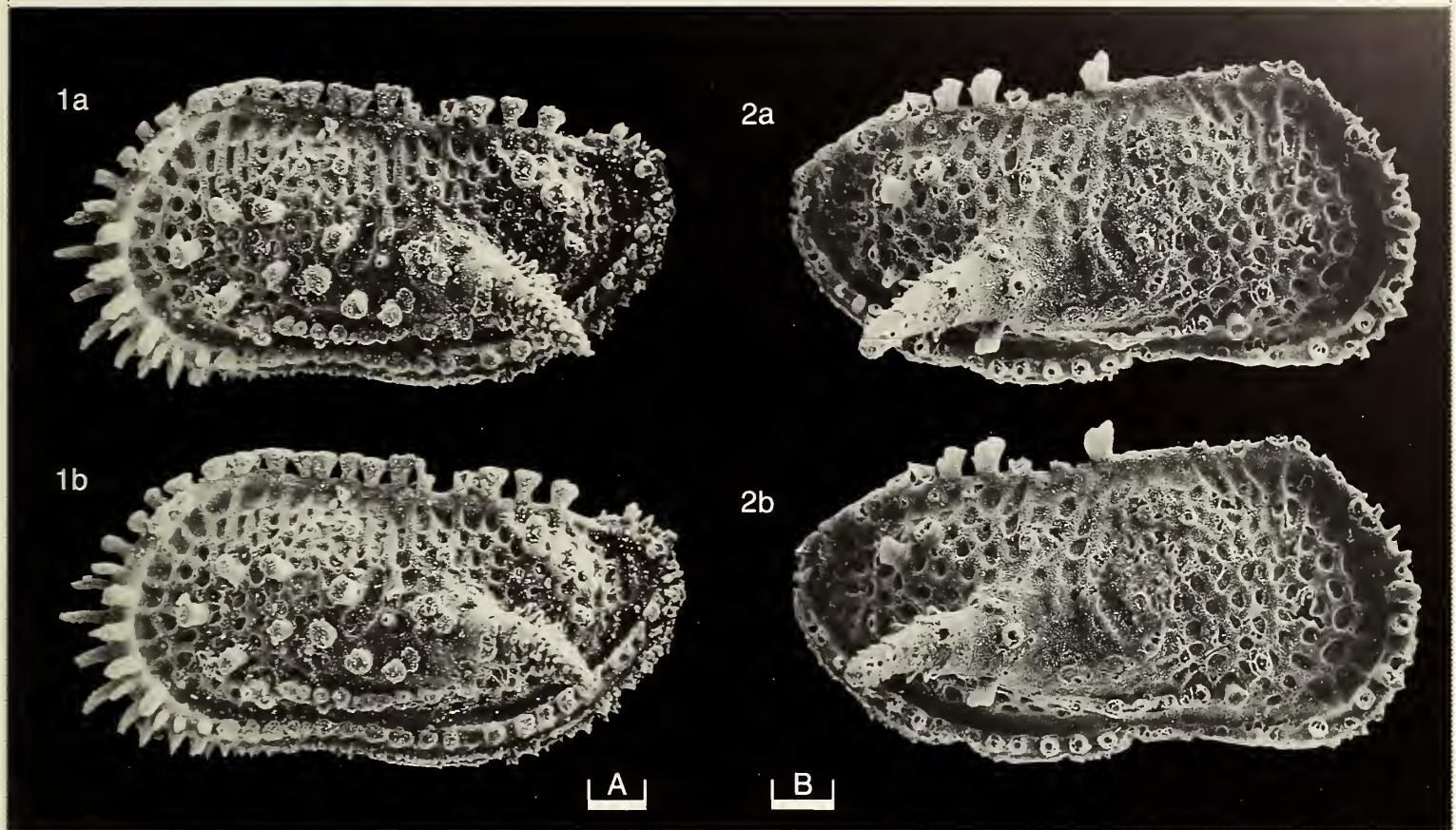
Remarks: The newly obtained knowledge of well preserved shells and sculptural details [recovered by disaggregation of siliceous chalk (“flint stone”) by treatment with hydrofluoric acid] requires the redescription of a species first described in 1966. The species was originally established on the basis of incomplete valves and ill-preserved elements of fine sculpture (broken posteroventral and marginal spines and surface reticulation). The distally expanding, club-like character of many of the spines is typical for the species.

Distribution: Upper Cretaceous. The white chalk of the Isle of Rügen and boreholes from the Isle of Usedom (Baltic Sea); lower Maastrichtian. Also from flint erratic boulders from northern Germany and the floor of the Baltic Sea; upper Maastrichtian.

Explanation of Plate 19, 20

Fig. 1, RV (**16591/2**, 0.96 mm long): int. lat. (anterovent. incomplete); fig. 2, RV (**16591/1**, 1.04 mm long): ext. dors.; fig. 3, RV (**5291/2**): ext. lat., detail.

Scale A (100 µm, ×83), figs. 1, 2; scale B (100 µm, ×240), fig. 3.



ON SCALDIANELLA SIMPLEX (KRAUSE)

by Lee E. Petersen & Robert F. Lundin
(Anardarko Petroleum Corporation, Houston, Texas & Arizona State University, Tempe, U.S.A.)

Genus *SCALDIANELLA* Gailite, 1967

Type-species (by original designation): *Thlipsura simplex* Krause, 1891

Diagnosis: Unisulcate, ? bisulcate or trisulcate Cavellinidae (Cavellininae) with strong dorsal and ventral overreach of left valve by right valve. Anterior straguloid process weak. Limen in posteroventral part of each female valve broadens ventrally.
Remarks: Gailite (in: Gailite, L.K., Rybnikova, M.V. & Ul'st, R.Zh., *Stratigraphy, fauna, and conditions of formation of the Silurian rocks of the central Baltic region*, [Russian], 151, 152, Izdat. "Zinatne", Riga, 1967), Sarv (in: Kaljo, D. (ed.), *Facies and fauna of the Baltic Silurian*, [Russian], 269–273, Acad. Sci. Est. SSR, Tallinn, 1977) and other authors have included unisulcate as well as trisulcate species in *Scaldianella*. Additionally, Sarv (1977, *op. cit.*) and Zbikowska (*Bull. Acad. pol. Sci. Ser. Sci. Terre*, 21(2), 144, 145, 1973; *Acta geol. pol.*, 23(4), 633, 1973) included a species, *S. bisulcata* Zbikowska, with two dorsoventrally oriented depressions on each valve, one of which is S_2 and the other of which may or may not be a true sulcus. If it is a true sulcus, under present taxonomy the genus contains uni-, bi- and trisulcate species. In this case sulcation is used as a species character, whereas, in a related group, the kloedenellids, the same character has been considered to be of generic significance. We suggest that this practice should be reconsidered.

Under its presently accepted concept, the genus is known from *S. simplex*, *S. personata* and *S. bisulcata*, all from Poland, the eastern Baltic region and/or Podolia (Ukraine). The discovery of the material described here extends the known geographic occurrence of the genus to Great Britain. Ulrich and Bassler's (*Maryland Geol. Surv., Lower Devonian Volume*, 538, 1913) report of *S. simplex* (reported as *Octonaria simplex*) in the Keyser Formation of Maryland needs to be checked. Their illustrations indicate the species present there is not a *Scaldianella*.

Explanation of Plate 19, 22

Figs. 1, 3, ♀ car. (ASU X-197, 846 µm long): fig. 1, ext. lt. lat.; fig. 3, ext. vent. Figs. 2, 4, ♂ car. (ASU X-198, 827 µm long): fig. 2, ext. dors.; fig. 4, ext. lt. lat. Fig. 5, ♂ RV, int. lat. (ASU X-199, 695 µm long).

Scale A (200 µm; ×60), figs. 1, 3; scale B (200 µm; ×62), figs. 2, 4; scale C (200 µm; ×73), fig. 5.

Scaldianella simplex (Krause, 1891)

- 1891 *Thlipsura simplex* sp. nov. A. Krause, *Z. dt. geol. Ges.*, 43, 508, pl. 32, fig. 16.
- 1932 *Thlipsurella? simplex* (Krause); F.M. Swartz, *J. Paleont.*, 10, 45.
- 1967 *Scaldianella simplex* (Krause); L.K. Gailite, in: Gailite, L.K., Rybnikova, M.V. & Ul'st, R.Zh., *Stratigraphy, fauna, and conditions of formation of the Silurian rocks of the central Baltic region*, [Russian], 152, pl. 12, fig. 5, Izdat. "Zinatne", Riga.
- 1968 *Krausellina simplex* (Krause); V.S. Krandijevsky, in: Krandijevsky, V.S., Ishchenko, T.A. & Kiryanov, V.V., *Paleontology and stratigraphy of the lower Paleozoic of Volyn-Podolia*, [Russian], 73, pl. 11, fig. 24, Ukr. Akad. Nauk.
- 1973 *Scaldianella simplex* (Krause); B. Zbikowska, *Acta geol. pol.*, 23(4), 633, pl. 8, fig. 2a, b.
- 1977 *Scaldianella simplex* (Krause); L. Sarv, in: Kaljo, D., *Facies and fauna of the Baltic Silurian*, [Russian], 270, pl. 4, figs. 1–11, Acad. Sci. Estonian S.S.R., Tallinn.
- 1986 *Scaldianella simplex* (Krause); R.E.L. Schallreuter, *Mitt. geol.-palaeont. Inst. Univ. Hamburg*, 61, 213, pl. 4, fig. 5.
- 1991 *Scaldianella simplex* (Krause); R.F. Lundin, L.E. Petersen & D.J. Siveter, *J. Micropalaeontol.*, 9 (pt. 2 for 1990), 180, pl. 2, fig. 4.
- 1991 *Scaldianella simplex* (Krause); W. Hansch, *Arch. Gesch. Nat.*, 1(2), 98, pl. 5, fig. 1.

Holotype: Palaeozoological Section, Berlin Museum of Natural History (M.B.O.), Berlin, Germany; no. M.B.O. 138; left valve (see Hansch 1991, *op. cit.*).

Type locality: The type specimen came from an erratic boulder (Beyrichienkalk no. 97 of Krause 1891, *op. cit.*), at Müggelheim in northern Germany.

Figured specimens: Department of Geology, Arizona State University, (ASU), nos. X-140 (♀ car.: Pl. 19, 24, figs. 1, 2), X-197 (♀ car.: Pl. 19, 22, figs. 1, 3), X-198 (♂ car.: Pl. 19, 22, figs. 2, 4), X-199 (♂ RV: Pl. 19, 22, fig. 5), X-200 (♀ car.: Pl. 19, 24, figs. 3, 4). ASU X-140, ASU X-197, ASU X-198 and ASU X-200 are from Wren's Nest, Dudley, West Midlands, England, lat. 2.05' W, long. 52.30' N. ASU X-199 is from Lincoln Hill about 250 m N of the River Severn at Ironbridge, Shropshire; lat. 2.30' W, long. 52.38' N. All figured specimens are from the Much Wenlock Limestone Formation; Homeric Stage, Wenlock Series, Silurian.

Diagnosis: Unisulcate *Scaldianella* in which females have a poorly developed limen. Domatium dimorphism indistinct, but females somewhat more swollen posteriorly than males. Males generally with greater length/height ratio than females.

Remarks: The specimens described here compare favourably with specimens of the species from Estonia provided by L. Sarv, although, normally, the Estonian specimens, as well as the holotype, have a more distinct S_2 than the British specimens.

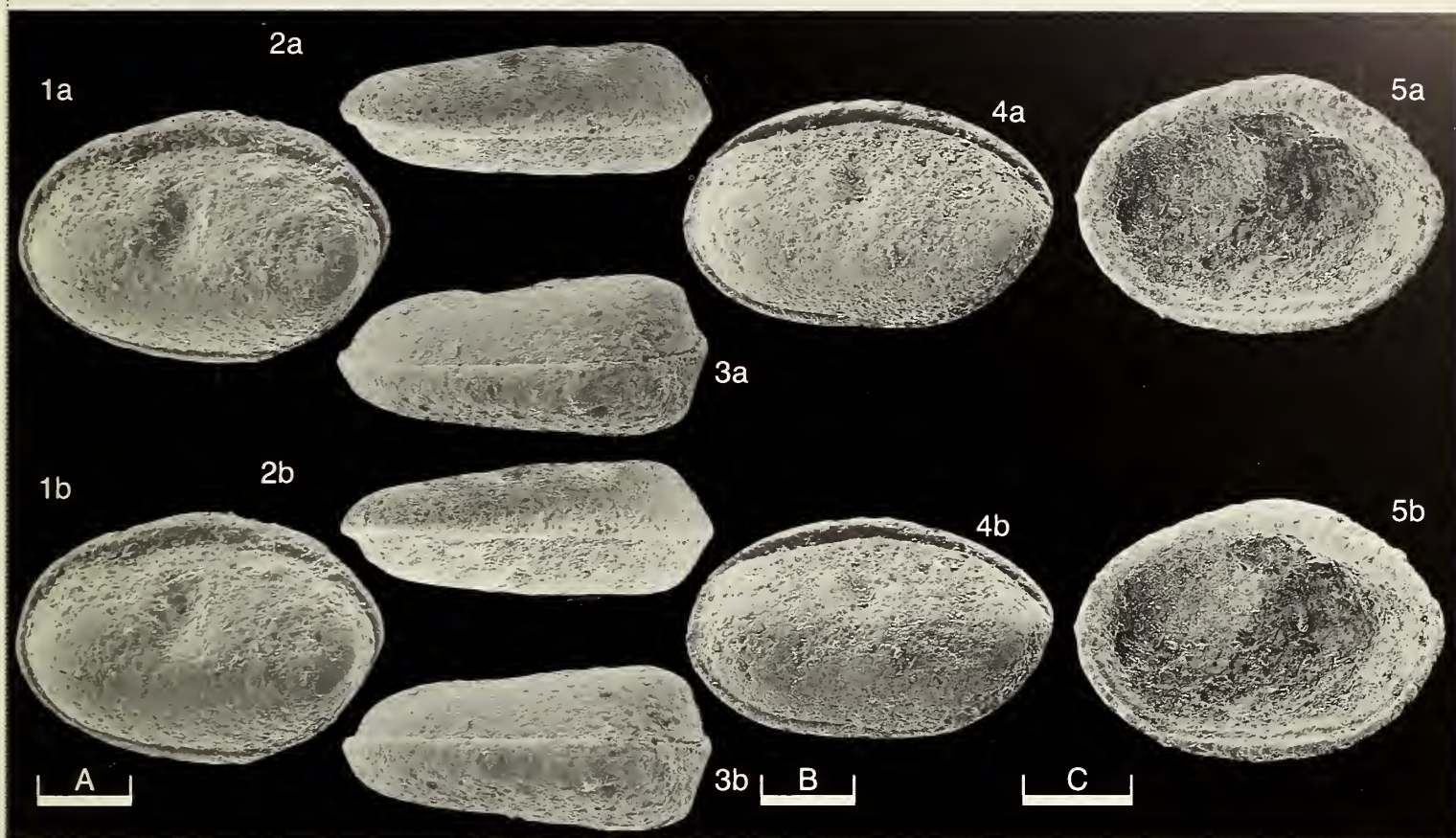
Distribution: With the discovery of the material reported here, the species is now known from Silurian erratics of northern Germany, late Wenlock and early Ludlow strata of the English West Midlands and the Welsh Borderland, and late Ludlow and early Přídolí strata of the eastern Baltic area.

Acknowledgements: We gratefully acknowledge support of NATO and the National Science Foundation (Grant No. EAR-8200816).

Explanation of Plate 19, 24

Figs. 1, 2, ♀ car. (ASU X-140, 771 µm long): fig. 1, ext. lt. lat.; fig. 2, ext. dors. Figs. 3, 4, ♀ car. (ASU X-200, 752 µm long): fig. 3, ext. rt. lat.; fig. 4, ext. lt. lat.

Scale A (200 µm; ×66), figs. 1, 2; scale B (200 µm; ×68), figs. 3, 4.



ON *GLYPTOPLEUROIDES INSCULPTUS* CRONEIS & GALE

by Christopher P. Dewey & Janet E. Coker
(Mississippi State University, Mississippi & Auburn University, Alabama, U.S.A.)

Genus *GLYPTOPLEUROIDES* Croneis & Gale, 1939

Type-species (by original designation): *Glyptopleuroides insculptus* Croneis & Gale, 1939

1939 *Glyptopleuroides* gen. nov. C. Croneis & A.S. Gale, *J. Scient. Labs Denison Univ.*, 33, 283, pl. 6, fig. 32.

Diagnosis: Small, subrhomboidal *Glyptopleuroides*; lateral surface has by marginal rim and elsewhere, broad, flat ridges separated by grooves. Ridges may anastomose. Hinge merodont? Free margin with transverse elements on inner flange; details of calcified inner lamella uncertain.

Glyptopleuroides insculptus Croneis & Gale, 1939

1939 *Glyptopleuroides insculptus* sp. nov. C. Croneis & A.S. Gale, *J. scient. Labs Denison Univ.*, 33, 283–4, pl. 6, fig. 32.

1941 *Glyptopleuroides insculptus* Croneis & Gale; C.L. Cooper, *Rep. Invest. Ill. St. geol. Surv.*, 77, 9, 17, pl. 8, figs. 28, 29.

Holotype: Field Museum of Natural History, Chicago, U.S.A., no. UC 44435; adult carapace.

Type locality: Locality no. G1, South line, Sec. 25, T11S R9E, Shawneetown Quadrangle, Illinois, U.S.A.; lat. 37° 31' 31"N, long. 88° 09' 31"W. Golconda Formation, Chesterian, Mississippian, Carboniferous.

Figured specimens: Field Museum of Natural History, U.S.A., no. UC 44435, (holotype, adult car: Pl. 19, 26, fig. 1). Dunn-Seiler Museum of Geology, Mississippi State University, U.S.A., nos. 3341–5a (adult car: Pl. 19, 28, fig. 1), 3341–5b (juv. car: Pl. 19, 26, figs. 2–4), 3341–5c (juv. RV: Pl. 19, 28, figs. 2–5).

No. UC 44435 from type locality, Illinois, U.S.A. Nos. 3341–5a, 3341–5b from light brown fossiliferous mudstone, N side of county highway 56, east of Mountain Star, Sec. 7, T6S R10W, Franklin County, Alabama, U.S.A.; lat. 34° 32' 50"N, long. 87° 37' 49"W. No. 3341–5c from light brown fossiliferous mudstone, county

Explanation of Plate 19, 26

Fig. 1, adult car., RV ext. lat. (UC 44435, 0.70 mm long). Figs 2–4, juv. car. (3341–5b, 0.62 mm long): fig. 2, LV ext. lat.; fig. 3, RV ext. lat.; fig. 4, ext. dors.

Scale A (250 µm; ×85), fig. 1; scale B (200 µm; ×86), figs. 2–4.

highway 37, Sec. 31, T5S R10W, Colbert County, Alabama, U.S.A.; lat. 34° 34' 12"N, long. 87° 37' 28"W. Bangor Limestone Formation, Chesterian, Mississippian.

Diagnosis: Small, subrhomboidal; dorsal and ventral margins straight, ends evenly rounded, slight anteroventral swing, anterior broadly rounded with maximum curvature anteroventrally. Dorsal aspect suboblong, maximum width posterior to midlength; hinge slightly incised. Surface has broad, flat, variably anastomosing ridges separated by grooves. Marginal rim extends from cardinal angles around free margin. Vertical ridge extends from posterodorsal corner just anterior of cardinal angle to ventral marginal rim. Three, anastomosing and posteriorly furcated, obliquely trending, lateral ridges fused in anteroventral quadrant posterior to marginal rim. Ridges confluent with posterior vertical ridge. Fourth, less distinct ridge, ventral to other three, fused with marginal rim anteroventrally. Marginal rim and all major ridges marked by vein-like ridges/reticulation. Grooves irregular, smooth. Hinge merodont (?), crenulate cardinal teeth in right valve. Free margin with transverse elements on inner surface.

Remarks: The holotype of *G. insculptus* Croneis & Gale, 1939 is an adult carapace but no paratypes were designated; thus, hitherto, the internal morphology of the genus was unknown. The genus was questionably referred to the Youngiellacea (Sohn, in: Moore, R.C. (ed.), *Treatise Invert. Paleont.*, Pt. Q, *Arthropoda* 3, 178, 1961), but our material from the Black Warrior Basin shows that *G. insculptus* differs from other youngiellaceans in two important respects. Firstly, *G. insculptus* has posterior crenulate hinge teeth in the right valve but no specimens have been found with the taxodont hinge typical of the youngiellaceans. If the hinge could be shown to be merodont, then together with the valve outline, this fact could be used to suggest a quasillitid affinity for the genus. Secondly, the inner surface of the free margin of *G. insculptus* possesses ridge-like elements, perpendicular to the valve margin. This feature is unlike the calcified inner lamella described for *Youngiella* (see Gramm, *Vnutrennie stuktur rakovin Paleozoiski ostrakod*, Akademia Nauk S.S.S.R., Leningrad, 4, 25, pl. 10, figs. 11, 13, pl. 31, figs. 4–16, 1984; Dewey & Coker, *Stereo-Atlas Ostracod Shells*, 18, 29–32, 1991). It is not likely, therefore, that *Glyptopleuroides* is a youngiellacean, although its true taxonomic position is still enigmatic.

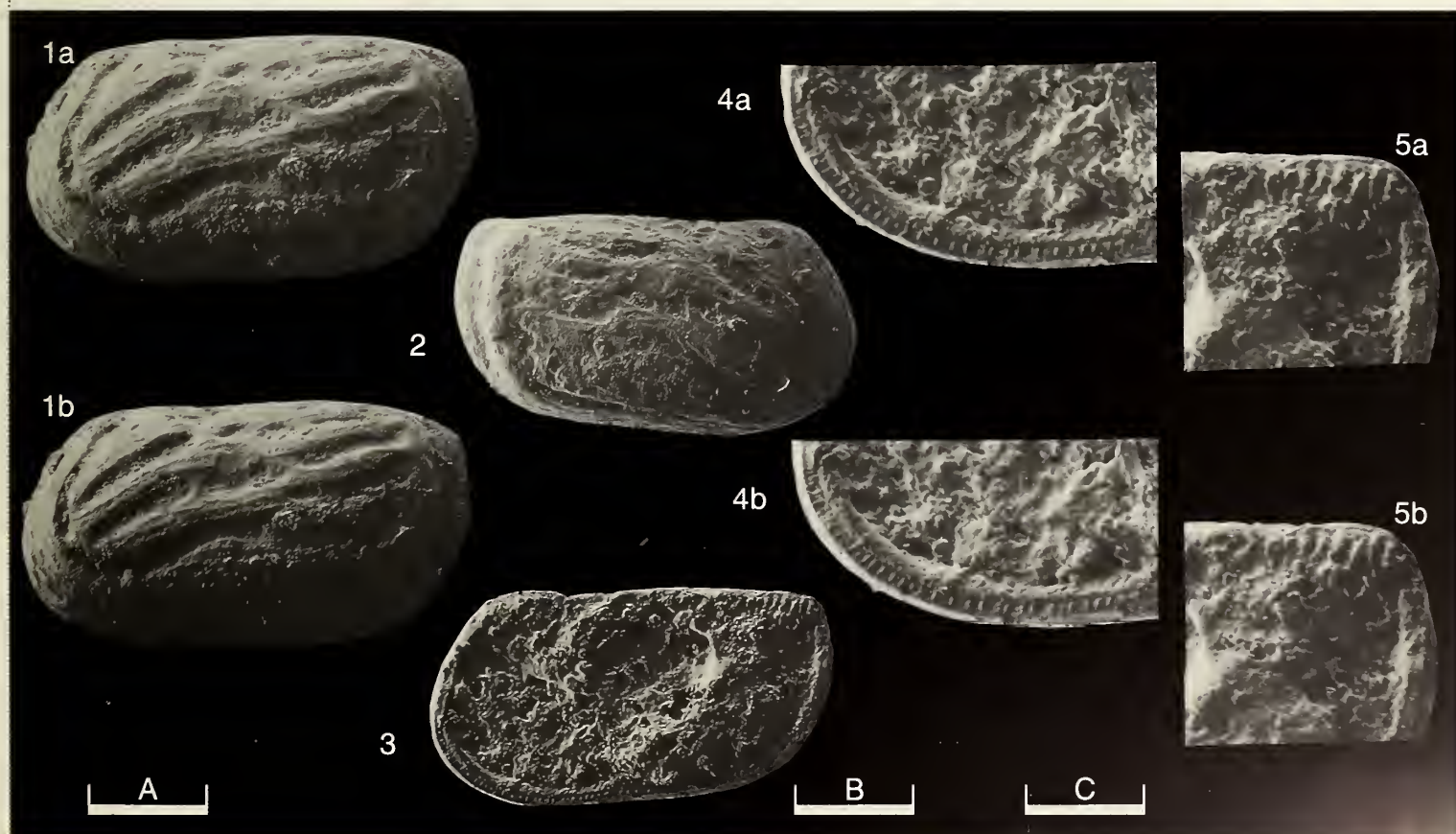
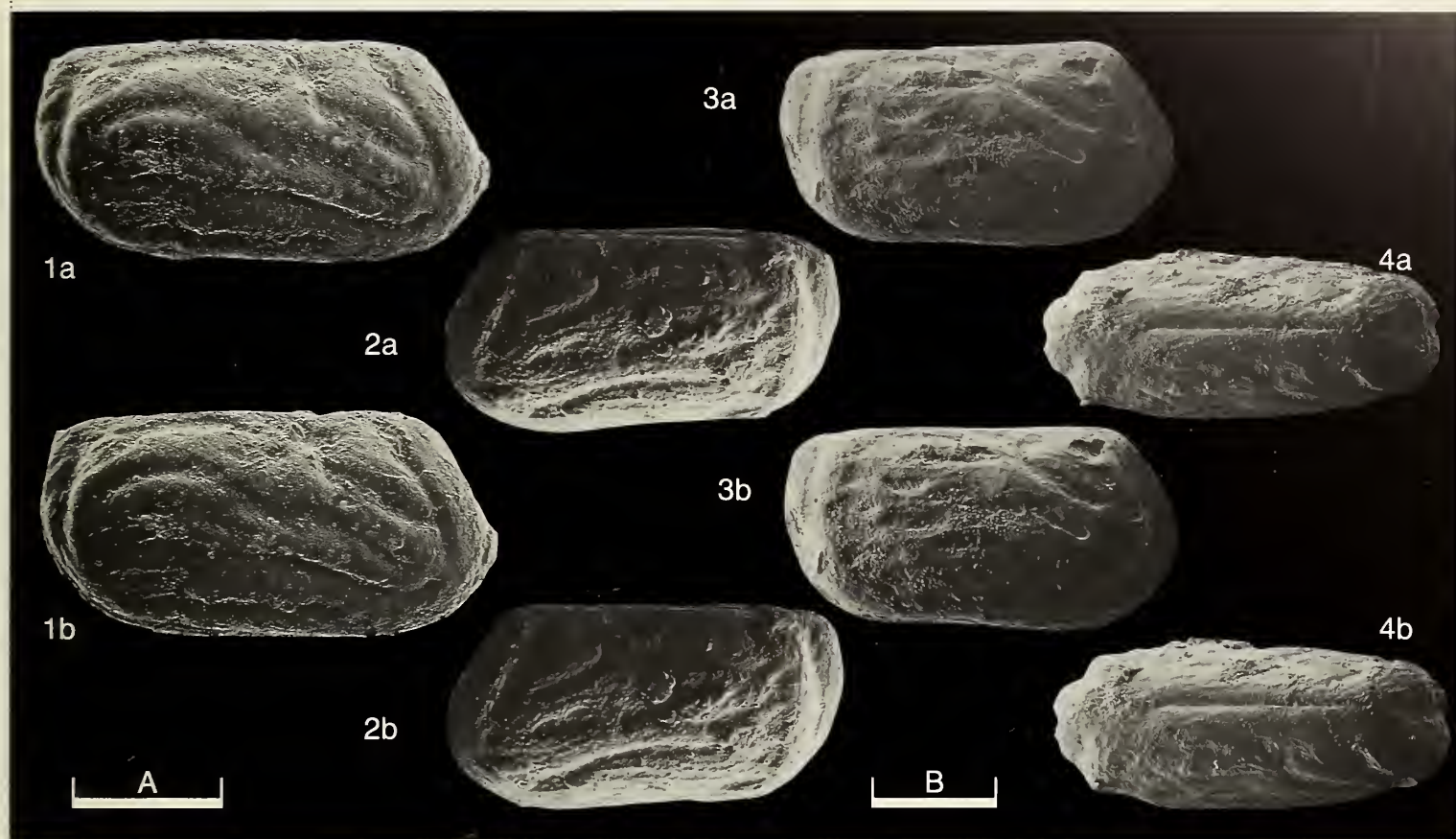
Distribution: Chesterian Series, Mississippian, Lower Carboniferous, U.S.A.

Acknowledgement: We acknowledge the financial support given by the Donors of the Petroleum Research Fund administered by the American Chemical Society.

Explanation of Plate 19, 28

Fig. 1, adult car., LV ext. lat. (3341–5a, 0.77 mm long). Figs. 2–5, juv. RV (3341–5c, 0.65 mm long): fig. 2, RV ext. lat.; fig. 3, RV int. lat.; fig. 4, RV int. anterovent. margin; fig. 5, int. post. hinge.

Scale A (200 µm; ×78), fig. 1; scale B (200 µm; ×86), figs. 2, 3; scale C (100 µm; ×164), figs. 4, 5.



ON *GLEZERIA BELGICA* (MATERN)

by Gerhard Becker & Michel Coen
(University of Frankfurt, Germany & University of Louvain-la-Neuve, Belgium)

Glezeria belgica (Matern, 1929)

- 1929 *Bollia belgica* sp. nov. H. Matern, *Abh. preuss. geol. Landesanst.*, N.F., **118**, 30, 31, pl. 2, figs. 22 a–c.
1974 *Glezeria belgica* (Matern); G. Becker, M.J.M. Bless, M. Streel & J. Thorez, *Meded. Rijks geol. Dienst.*, N.S., **25**(2), pl. 2, figs. 11, 13, ?12.
1977 *Glezeria belgica* (Matern); M. Coen, *Annls Soc. géol. Belg.*, **100**, 27.
1987 *Glezeria ? belgica* (Matern); J.-G. Casier, *Bull. Soc. belge Géol.*, **96**, 26.
1988 *Balantoides* sp.; J.-G. Casier, *Bull. Inst. r. Sci. nat. Belg.* (Sciences de la Terre), **58**, 81, pl. 2, fig. 17.

Holotype: Institute royal des Sciences naturelles de Belgique, Bruxelles, Belgium, no. **IRBa1a**; an adult LV.

Type locality: Les Abannets, Nismes village, about 4 km E of Frasnès village, S border of the Dinant basin, Belgium; lat. 50°04'N, long. 4°34'E. Green-greyish to brownish fossiliferous shales, Upper *asymmetricus* conodont zone, middle Frasnian (F2e), Upper Devonian.

Figured specimen: Forschungs-Institut Senckenberg, Frankfurt am Main (SMF), Germany, nos. **SMF Xe 15152** (adult ♂ car.: Pl. 19, 30, fig. 1; Pl. 19, 32, fig. 2), **SMF Xe 15153** (adult ♂ car.: Pl. 19, 30, fig. 2; Pl. 19, 32, fig. 1), **SMF Xe 15154** (adult ♀ car.: Pl. 19, 30, fig. 3), **SMF Xe 15155** (adult ♀ car.: Pl. 19, 32, figs. 3, 4), **SMF Xe 15156** (adult ♀ car.: Pl. 19, 32, fig. 5).

Explanation of Plate 19, 30

Fig. 1, adult ♂ car., rt. lat. (**SMF Xe 15152**, 875 µm long). Fig. 2, adult ♂ car., ant. (**SMF Xe 15153**, 970 µm long). Fig. 3, adult ♀ car., rt. lat. (**SMF Xe 15154**, 845 µm long).
Scale (100 µm; ×85), figs. 1–3.

All the figured specimens are from the type level at Boussu-en-Fagne, 7 km W from the type locality; lat. 50°05'N, long. 4°28'E.

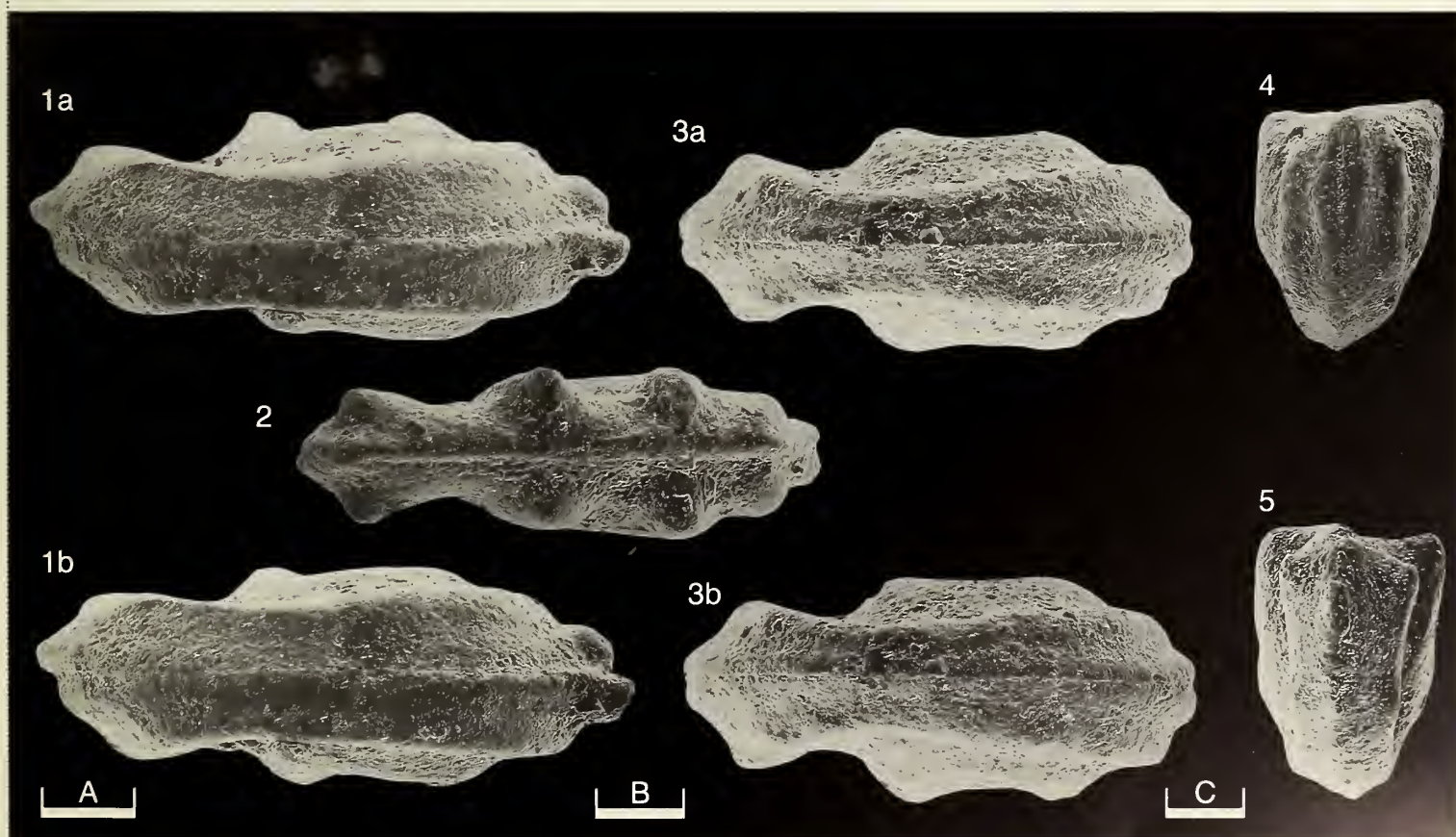
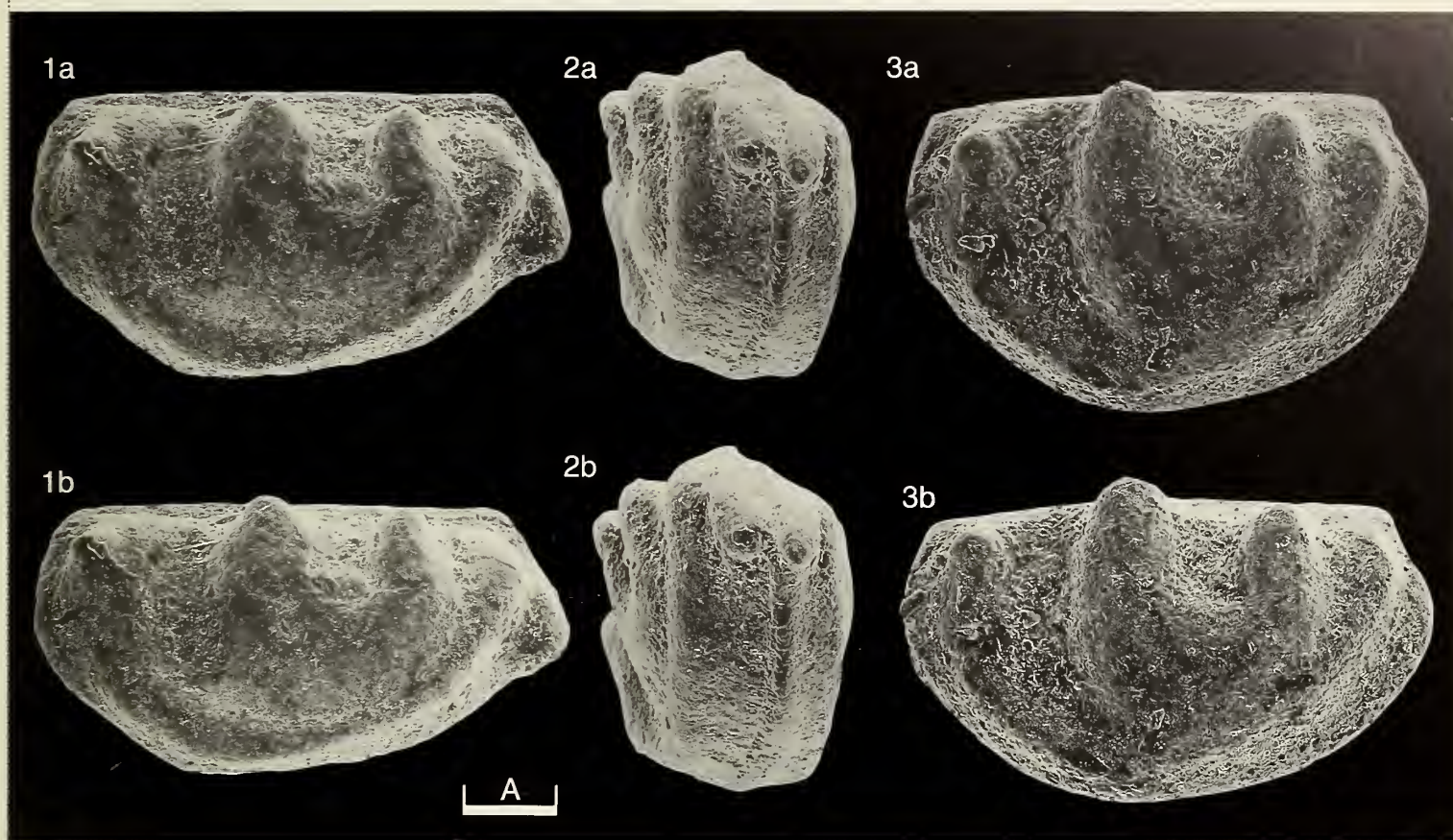
Diagnosis: *Glezeria* species with comparatively short median sulcus and broad ventral lobe. Hamal structure in tecnomorphs is a short but strongly developed anterodorsally located hook, in heteromorphs it is a low but distinct, anteriorly located ridge.

Remarks: *Glezeria belgica* was originally placed in the genus *Bollia* Jones & Holl, 1886. In connection with a revision of the ostracod species established by Matern (1929) (see G. Becker, *Bull. Inst. r. Sci. Belge*, **47**, 34, 1971) the species was then transferred by Becker *et al.* (1974 *op. cit.*) to the taxon *Glezeria* Shishkinskaya, 1968, a genus originally proposed for bilobate “drepanellids”. This genus, however, belongs (as indicated, herein, by the morphology of *Glezeria belgica*) to the Superfamily Nodellacea Becker, 1968, because of the occurrence of the distinct hamal type of dimorphism. *Glezeria belgica* is considered to have been a benthic species.

Distribution: Belgium; middle to upper Frasnian, probably lower Famennian, Upper Devonian.

Explanation of Plate 19, 32

Fig. 1, adult ♂ car., vent. (**SMF Xe 15153**, 970 µm long). Fig. 2, adult ♂ car., dors. (**SMF Xe 15152**, 875 µm long). Figs. 3, 4, adult ♀ car. (**SMF Xe 15155**, 825 µm long): fig. 3, vent.; fig. 4, ant. Fig. 5, adult ♀ car., post. (**SMF Xe 15156**, 825 µm long).
Scale A (100 µm; ×85), figs. 1, 3; scale B (100 µm; ×82), fig. 2; scale C (100 µm; ×80), figs. 4, 5.



ON *KANYGINIA HARTMANNI* SCHALLREUTER & KANYGIN sp. nov.

by Roger E.L. Schallreuter & Aleksandr V. Kanygin

(University of Hamburg, Germany & Russian Academy of Sciences, Siberian Branch, Novosibirsk)

Kanyginia hartmanni sp. nov.

- Deviation of name:* In honour of Professor Gerd Hartmann, University of Hamburg.
Holotype: Institute of Geology, Siberian Branch of the Russian Academy of Sciences (RAN), Novosibirsk (IGN), no. 1054/7; female left valve.
Type locality: At depth 76.9 m in borehole 4–6, Dyukunak, Morkoka river area, Siberia; approximately lat. 64° 45' N, long. 62° 30' E. Stan Formation, Chertovskian, middle Ordovician.
Figured specimens: Institute of Geology, Novosibirsk, (IGN) nos. 1054/7 (holotype, ♀ LV: Pl. 19, 36, fig. 1), 1054/8 (RV: Pl. 19, 34, fig. 2), 1054/9 (RV: Pl. 19, 34, fig. 1), and 1054/10 (RV: Pl. 19, 36, fig. 2). All specimens are from the type locality. Of the figured specimens only the sex of the holotype is certain.

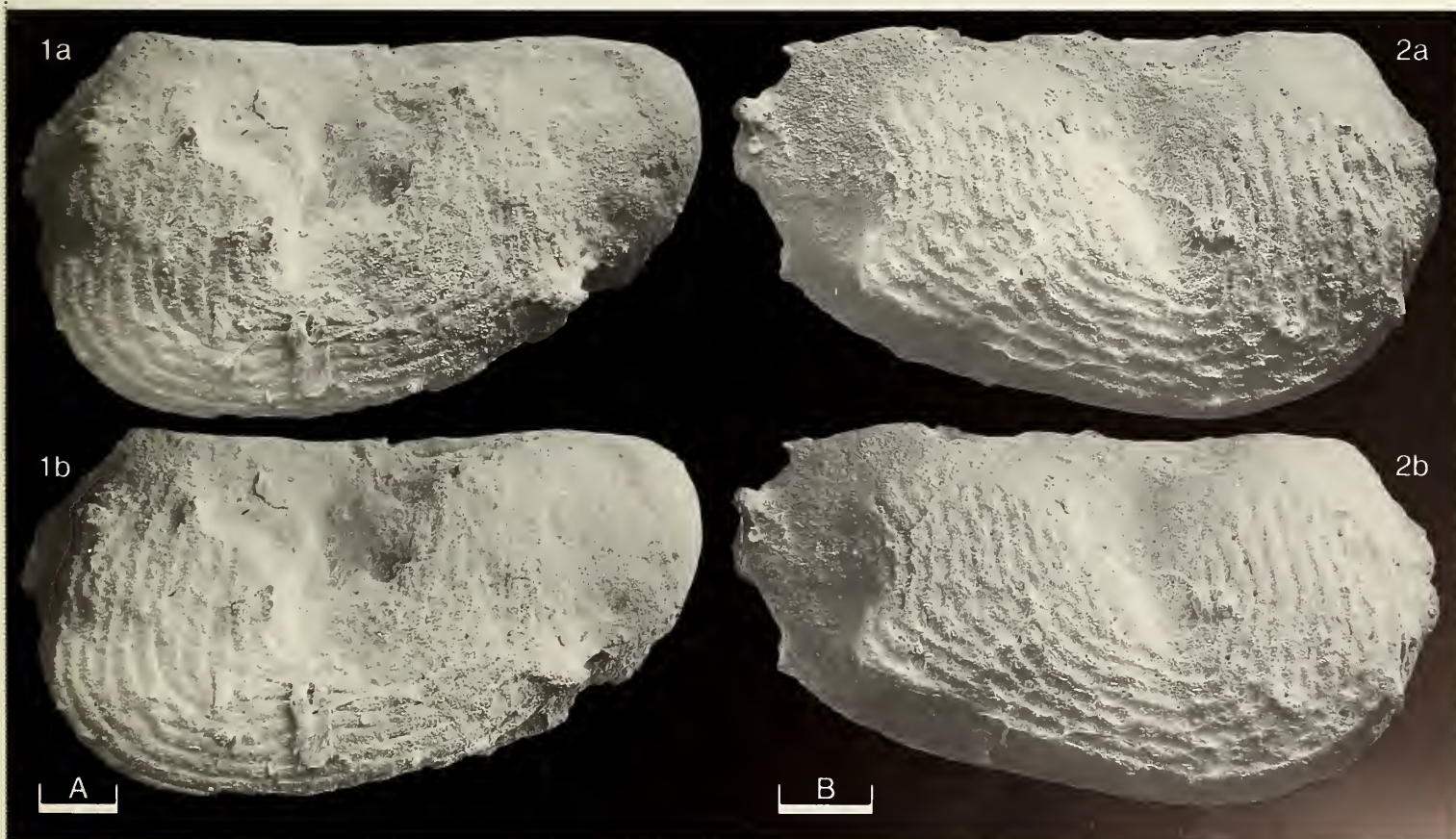
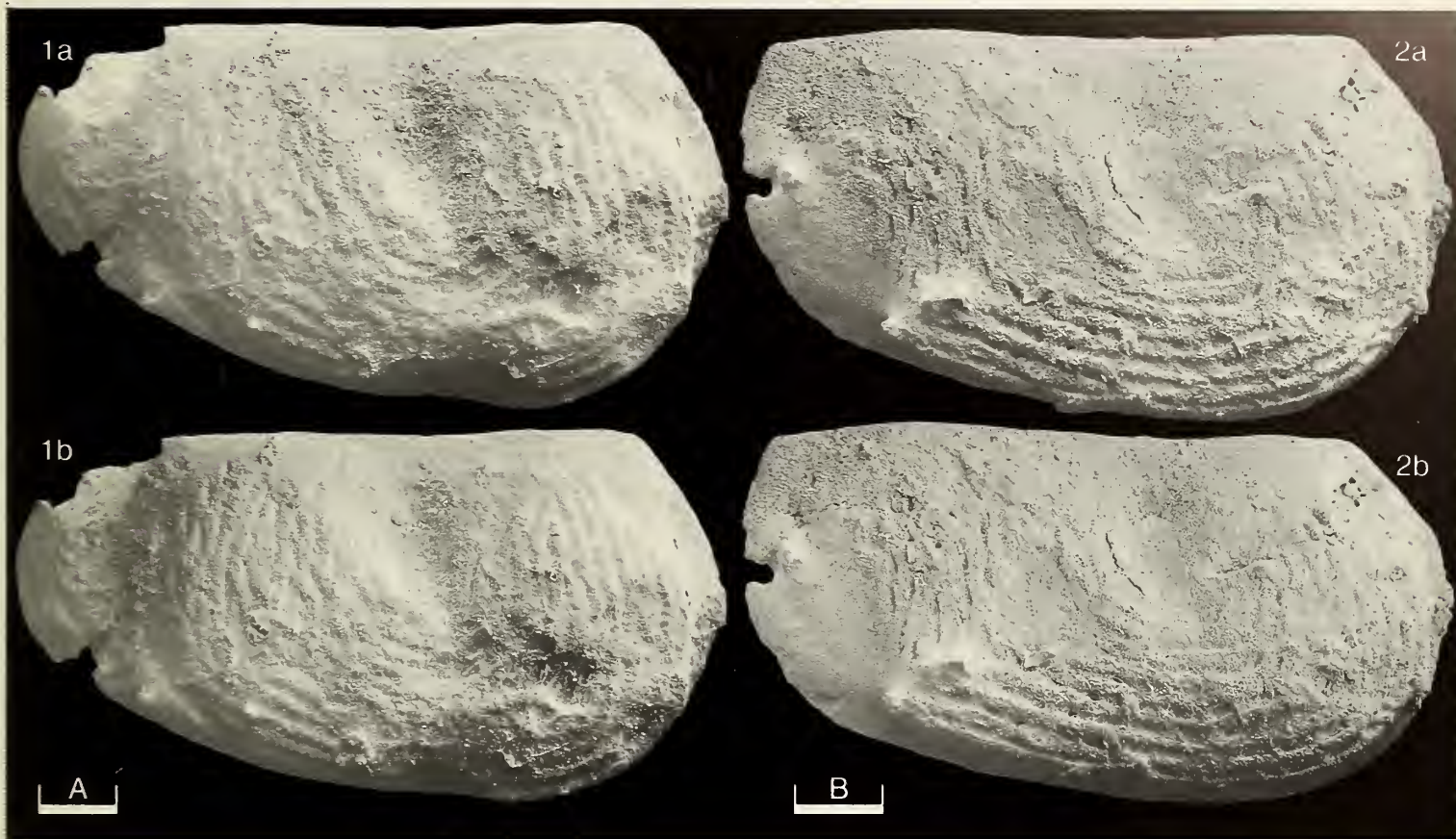
Explanation of Plate 19, 34

Fig. 1, RV ext. lat. (IGN 1954/9, 0.90 mm long); fig. 2, RV ext. lat. (IGN 1054/8, 0.71 mm long).
Scale A (100 µm; ×110), fig. 1; scale B (100 µm; ×135), fig. 2.

- Diagnosis:* Species of *Kanyginia* with length up to 0.90 mm. Sulcus (S2) relatively shallow. A swarm of ridges also posterior of sulcus, incorporating more than half of posterior field of the valve.
Remarks: The new species is very similar to the slightly older type-species of *Kanyginia*, *Oecematobolbina armilata* Kanygin, 1971 (*Trudy Inst. Geol. Geofiz. sib. Otd.*, 128, 58), from the lower Labystakh Formation of Sette-Daban, Siberia. The latter species differs in having fewer ridges in its ornament and in that the ridges only occur in the ventral and anterior parts of the valve (see Kanygin, *op. cit.*, pl. 5, figs. 1–4). Furthermore, the sulcus is deeper in *K. armilata* than in *K. hartmanni*.
Kanyginia Schallreuter & Krüta (*Neues Jb. Geol. Paläont. Mh.*, 1980(8), 506) was originally established as a subgenus of *Hippula* (= *Oecematobolbina*). As shown by the new species herein, there are no rhombiform septa between the ridges in *Kanyginia*. *Kanyginia* is, therefore, no longer considered to be a subgenus of *Hippula*. However, it is still considered to be a member of the Tribe Hippulini Schallreuter (*Palaeontographica*, (A), 108(4/6), 144, 1983).
Distribution: Known only from the type locality, Stan Formation, middle Ordovician of the Siberian platform.

Explanation of Plate 19, 36

Fig. 1, ♀ LV ext. lat. (holotype, IGN 1054/7, 0.84 mm long); fig. 2, RV ext. lat. (IGN 1054/10, 0.79 mm long).
Scale A (100 µm; ×110), fig. 1; scale B (100 µm; ×120), fig. 2.



ON *FIDELITELLA (SIBIRITELLA) RARA* (IVANOVA)

by Roger E.L. Schallreuter & Aleksandr V. Kanygin
(University of Hamburg, Germany & Russian Academy of Sciences, Siberian Branch, Novosibirsk)

Genus *FIDELITELLA* V. Ivanova, 1960

Type-species (by original designation): *Trilobella unica* V. Ivanova, 1955

Diagnosis: Soanellid with asymmetrical carapace. Right valve quadrilobate; left valve tri- or quadrilobate, lobes weaker than in right valve. No adventral sculptures. Sexual dimorphism unknown.

Subgenus *FIDELITELLA (SIBIRITELLA)* Kanygin, 1967

Type-species (by original designation): *Tetradella rara* Ivanova, 1955

Diagnosis: Both valves quadrilobate. S1 in both valves short; lobes in left valve flatter than in right valve.

Remarks: In the asymmetry of its valve morphology (and in the fact that its sexual dimorphism is unknown) *T. rara* Ivanova, 1955 compares with *Fidelitella* Ivanova, 1960 (in: I.E. Zanina *et al.*, *Osnovy paleontologii*, 8, 305). In the type-species of the latter genus, *Trilobella unica* V.A. Ivanova (in: E.A. Ivanova *et al.*, *Trudy PIN*, 56, 178, 1955), the right valve has a long L2 and a deep S1 which is missing in the left valve. *F. (S.) rara* exhibits, in both valves, a short, discrete L2 and a corresponding short S1. *F. (F.) simplex* (Ivanova, 1955) has a similar short S1 in the left valve but has a long S1 in the right valve. Thus, in this respect *F. simplex* forms, morphologically, a transition between *F. unica* and *F. rara*.

Whereas in both *F. (F.) unica* and *F. (F.) simplex* S1 in the larger left valve is either missing or is shorter than that of the right valve, in *Sibiritella* S1 and L2 are symmetrical between valves. The asymmetry of the valves in *F. (S.)* is expressed mainly by the strength of the development of the lobes. In this respect *Sibiritella* is still, therefore, considered as a discrete subgenus.

Fidelitella (Sibiritella) rara (Ivanova, 1955)

1955 *Tetradella rara* Ivanova; O.I. Nikiforova, *Polevoj atlas ordovikskoj i silurijskoj fauny Sibirskoj platformy*, 16, BSEGEI, Moscow.

1955 *Tetradella rara* sp. nov. V.A. Ivanova, *Ibid.*, 113, 182, pl. 20, fig. 5.

1960 *Tetradella rara* V. Ivanova; V.A. Ivanova, *Mater. Osnov. Paleont.*, 3, 80.

Explanation of Plate 19, 38

Fig. 1, LV ext. lat. (GPIMH 3237, 2.12 mm long). Fig. 2, RV ext. lat. (GPIMH 3238, 2.20 mm long).

Scale A (250 µm; ×38), fig. 1; scale B (250 µm; ×44), fig. 2.

- 1967 *Sibiritella rara* (V. Ivanova); V.A. Kanygin, *Ostrakody ordovika gornoj sistemy Sherskogo*, 87, 88, 89, 90, 92, 94, 125, 135, 138, 151, pl. 16, figs. 1–5, table 2, 3, 6, 10, Nauka, Moscow.
- 1971 *Sibiritella rara* (V. Ivanova); V.A. Kanygin, *Trudy Inst. Geol. Geofiz. sib. Otd.*, (IGiG), 128, 81.
- 1972 *Sibiritella rara* (V. Ivanova); V.A. Ivanova, *Katalog originalov, Ostrakody*, 81, 86, Acad. Sci., Moscow.
- 1973 *Valentella rara* (V. Ivanova); A.I. Neckaja, *Trudy VNIGRI*, 324, 36, 72.
- 1974 *Sibiritella rara* (V. Ivanova); G.R. Kolosnitsyna in: L.V. Ogienko *et al.*, *Biostratigrafija kembrijskich i ordovikskich otlozhenij juga Sibirskoj platformy*, 48, 97, 198, pl. 33, figs. 8, 9, Nedra, Moscow.
- 1974 *Sibiritella rara* (V. Ivanova); A.V. Kanygin, *Trudy IGiG*, 84, 92, 97.
- 1975 *Sibiritella rara* (V. Ivanova); G.R. Kolosnitsyna in: Yu. I. Tesakov, *Ibid.*, 200, 21, 78, 82, 187, 207, 214, 215, 218, 236, fig. 11, table 4, 5.
- 1979 *Sibiritella rara* (V. Ivanova); V.A. Ivanova, *Trudy PIN*, 172, 165, 166, 167, 191, pl. 14, figs. 10, 11.
- 1980 *Sibiritella rara* (V. Ivanova); A.V. Kanygin *et al.*, *Geologiya Geofiz.*, 1980(6), 17.
- 1982 *Sibiritella rara* (V. Ivanova); Ju. I. Tesakov *et al.*, *Trudy IGiG*, 506, 47, 48, figs. 5, 8 (logs).
- 1984 *Sibiritella rara* (V. Ivanova); A.G. Jadrenkina *et al.*, *Ibid.*, 584, fig. p. 18 (log).
- 1984 *Sibiritella rara* (V. Ivanova); A.V. Kanygin *et al.*, *Ibid.*, 590, 12.
- 1984 *Sibiritella rara* (V. Ivanova); A.V. Kanygin, *Ibid.*, 590, 91, 222, pl. 22, figs. 2–3, 5, 8–10 (non fig. 6).
- 1984 *Sibiritella rara* (V. Ivanova); A.V. Kanygin *et al.*, *Ibid.*, 595, 80.
- 1985 *Sibiritella rara* (V. Ivanova); A.V. Kanygin, *Ibid.*, 615, 7.
- 1987 *Sibiritella rara* (V. Ivanova); Ju. Ja. Schabanov *et al.*, *Niznij paleozoja jugo-zapadnogo klona Anabarskoj anteklizy*, 39, Nauka, Novosibirsk.
- 1988 *Sibiritella rara* (V. Ivanova); A.V. Kanygin *et al.*, *Publ. Int. Un. Geol. Sci.*, 26, 6, pl. A.
- 1988 *Sibiritella rara* (V. Ivanova); A.V. Kanygin in: M.M. Oradovskaya, *Ibid.*, 26, 104, pl. D.
- 1989 *Sibiritella rara* (V. Ivanova); V.A. Kanygin *et al.*, *Trudy IGiG*, 751, 18, 19, 20, 21, 28, 35, 36, 152, figs. 3, 7 (logs), table 2.
- 1990 *Sibiritella rara* (V. Ivanova); V.A. Ivanova in: Abushik *et al.*, *Prakt. rukov. mikrof. S.S.S.R.*, 4, 63, 233, pl. 8, fig. 9.

Holotype: Palaeontological Institute, Russian Academy of Sciences, Moscow (PIN), no. 1597/4; left valve.

Type locality: River Nyuya, near Mukhtuya, Siberian platform; approximately lat. 60°31'N, long. 116°23'E. Lower Krivolukian, Volginian, middle Ordovician.

Figured specimens: Geologisch-Paläontologisches Institut and Museum, University of Hamburg, Germany (GPIMH) nos. 3237 (LV: Pl. 19, 38, fig. 1), 3238 (RV: Pl. 19, 38, fig. 2), 3239 (RV: Pl. 19, 40, fig. 1), and 3240 (LV: Pl. 19, 40, fig. 2). All from Dyukunak: boring 1–4, depth 135.1 m; Morkoka River, Siberian platform; approximately lat. 64°45'N, long. 62°30'E. Krivaya Luka Formation, Volginian, middle Ordovician.

Diagnosis: Species of *F. (Sibiritella)* up to 3 mm long. Outline of right valve semi-ovoid. Lobes connected ventrally; L1, L3 and L4 gradually become more elevated in dorsal direction, dorsal ends being bulb-like. Lobes lack pores or furrows.

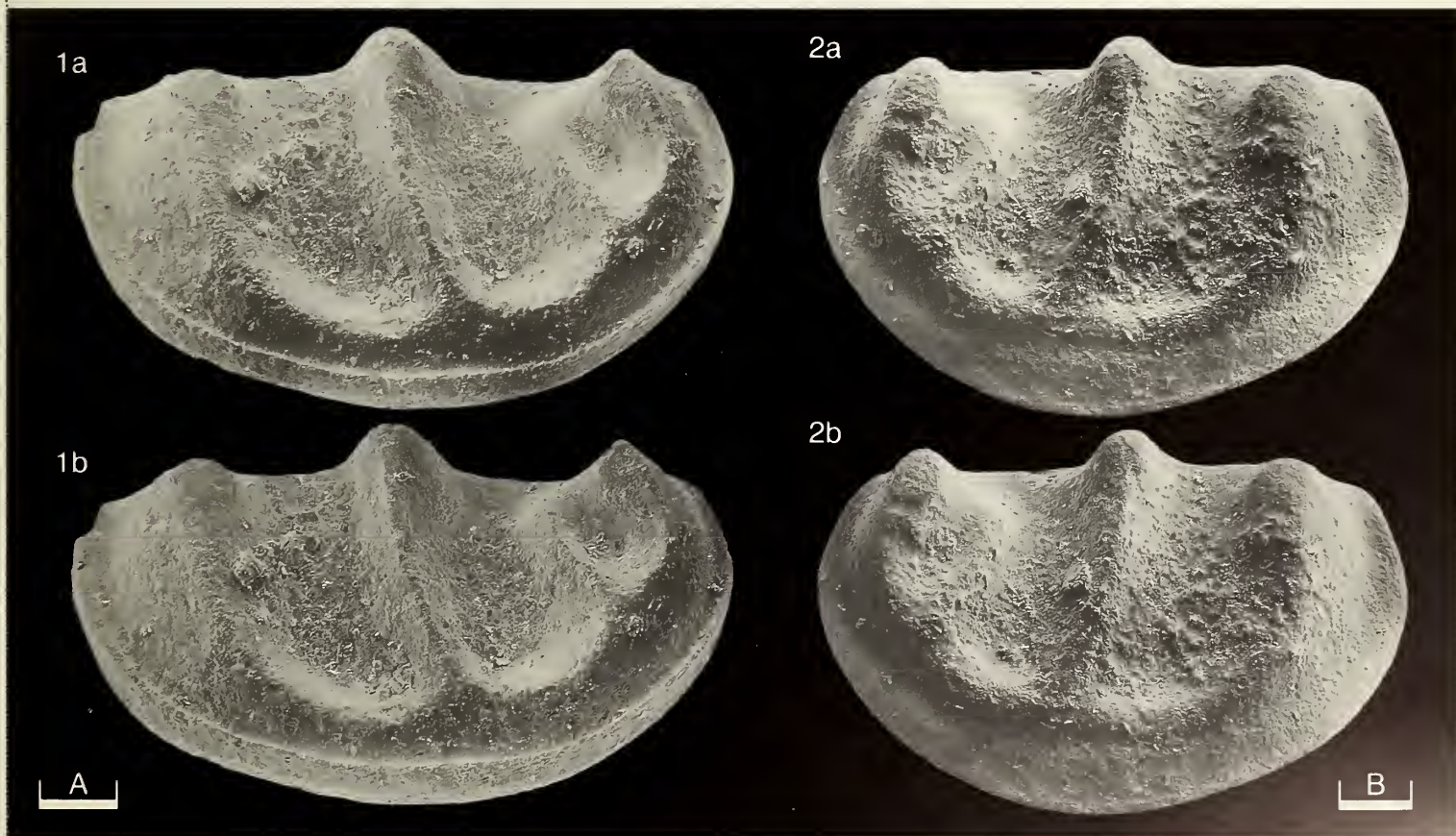
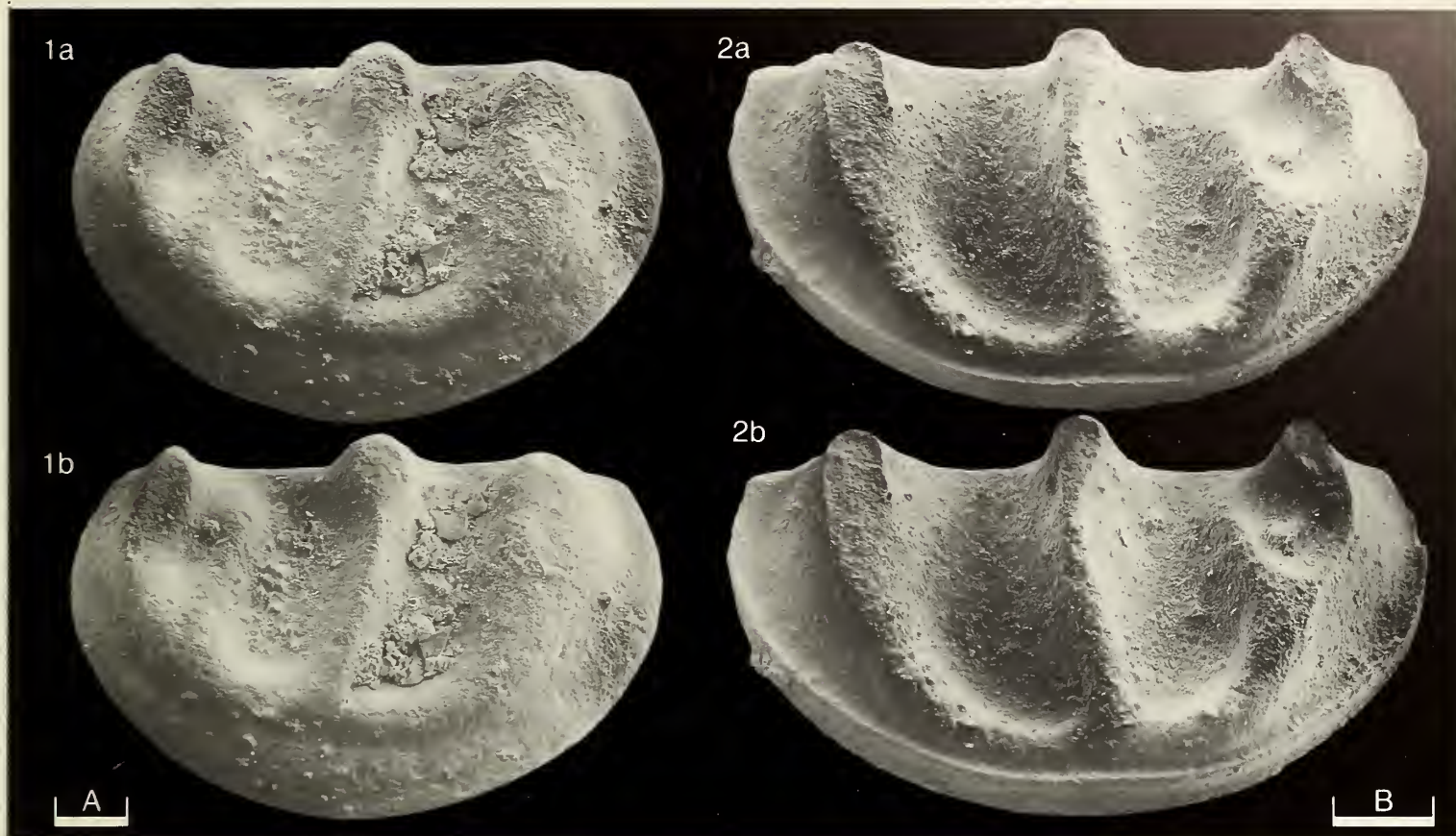
Remarks: *F. (S.) furcata* Kanygin, 1967 (*op. cit.*, 90) differs from *F. (S.) rara* mainly by the more distinct asymmetry of its valves, the more trapezoid outline of its right valve and in lacking a ventral connection to its lobes which furthermore, are more equal in height and show a development of pores and furrows (Kanygin, 1967, *op. cit.*, 92).

Distribution: Volginian of Siberian platform: Rivers Nyuya, Lena, Poloviny, Moyero, Morkoka, Kulumbe. Lachugian of NE Siberia.

Explanation of Plate 19, 40

Fig. 1, RV ext. lat. (GPIMH 3239, 2.11 mm long); fig. 2, LV ext. lat. (GPIMH 3240, 2.17 mm long).

Scale A (250 µm; ×43), fig. 1; scale B (250 µm; ×37), fig. 2.



ON *PSEUDOCANDONA CERATINA* MAZEPOVA

by Koen Martens, Irina Noskova & Galina Mazepova
(Royal Belgian Institute of Natural Sciences, Brussels &
Limnological Institute, Siberian Branch of the Russian Academy of Sciences, Irkutsk)

Pseudocandona ceratina Mazepova, 1982

1982 *Pseudocandona ceratina* sp. nov., G. Mazepova, *Novoye o Faune Baikala*, 120, fig. 7, "Nauka" (Sib. Otdel. Akad. Nauk S.S.S.R.), Novosibirsk.

1990 *Pseudocandona ceratina* Mazepova; G. Mazepova, *Rakuschkovye ratschki (Ostracoda) Baikala*, 197–200, figs. 77, 78, *Ibid.*

Holotype: (originally designated as "type specimen"): a ♀, with the following measurements: LV: L = 888 µm, H = 518 µm; RV: L = 874 µm, H = 483 µm. Limnological Institute, Siberian Branch of the Russian Academy of Sciences, Irkutsk; no catalogue number.

Type locality: Lake Baikal, northern basin, Tompuda (approx. lat. 55° 08' N, long. 109° 45' E), depth 10 m on sand.

Figured specimens: Royal Belgian Institute of Natural Sciences, Brussels, Ostracod Collection, nos. **OC1599** (♂: Pl. 19, 48, fig. 2), **OC1600** (♂: Pl. 19, 46, fig. 2), **OC1601** (♂: Pl. 19, 42, fig. 3; 19, 44, fig. 3; text-figs. 2a–f; 3a, d, f), **OC1602** (♂: Pl. 19, 46, fig. 3; 19, 48 fig. 3), **OC1603** (♀: Pl. 19, 44, fig. 2), **OC1604** (♀: Pl. 19, 42, fig. 2), **OC1605** (♀: Pl. 19, 42, fig. 1; 19, 44, fig. 1; text-figs. 3b, c, e, g, h), **OC1606** (♀: Pl. 19, 46, fig. 1; 19, 48, fig. 1). All collected from the vicinity of the type locality.

Diagnosis: Subrectangular, strongly pitted valves, with straight dorsal margin, broadly rounded anterior margin, and largely sinuous ventral margin, the latter showing a striking sexual dimorphism, with a large,

Explanation of Plate 19, 42

Fig. 1, ♀ LV, ext. lat. (**OC1605**, 931 µm long); fig. 2, ♀ car., vent. (**OC1604**, 897 µm long); fig. 3, ♂ LV, ext. lat. (**OC1601**, 879 µm long).

Scale A (200 µm; ×75), figs. 1–3.

asymmetrically inserted tooth on both valves in males, absent in females. LV overlapping RV ventrally and anterodorsally. Dorsal margin passing into anterior margin with a striking indentation in both sexes. Caudal margin forming a nearly rectangular corner with the dorsal margin in females; caudal margin bluntly produced towards the ventral side in males. Anterior inner lamella moderately wide in both valves; RV with a submarginal, weakly developed inner list.

Males with four pairs of seminal tubes. Antennula set with (non-flagellated) claws. Antenna without male bristles, but with elongated subterminal segment (length at least 3 times basal width) weakly divided; sexual dimorphism in apical chaetotaxy evident: z1 and z2 in males full-grown claws. G3 a small claw; in females z1 (or z3) missing, G3 a large claw. Hemipenis with lobes "a", "h" and "b" simple; post-labyrinthal part of inner spermiductus uncoiled in relaxed condition; bursa copulatrix large. Prehensile palps consisting of one segment, largely asymmetrical: right palp rounded, with two seta-like lateral processes; left palp strongly developed and sickle-shaped, with two stout seta-like lateral processes and one rounded lobe-like outgrowth. Furcal ramus slightly more curved in females.

Remarks: Like *Pseudocandona gajewskajae* Bronstein, 1947 (see K. Martens, I. Noskova & G. Mazepova, *Stereo-Atlas Ostracod Shells* 19, 49–56, 1992), *P. ceratina* probably belongs to a phyletic lineage related to, but quite different from true *Pseudocandona*. New genera cannot be erected, however, without a thorough re-examination of all European and Baikalian representatives of this apparently polyphyletic genus.

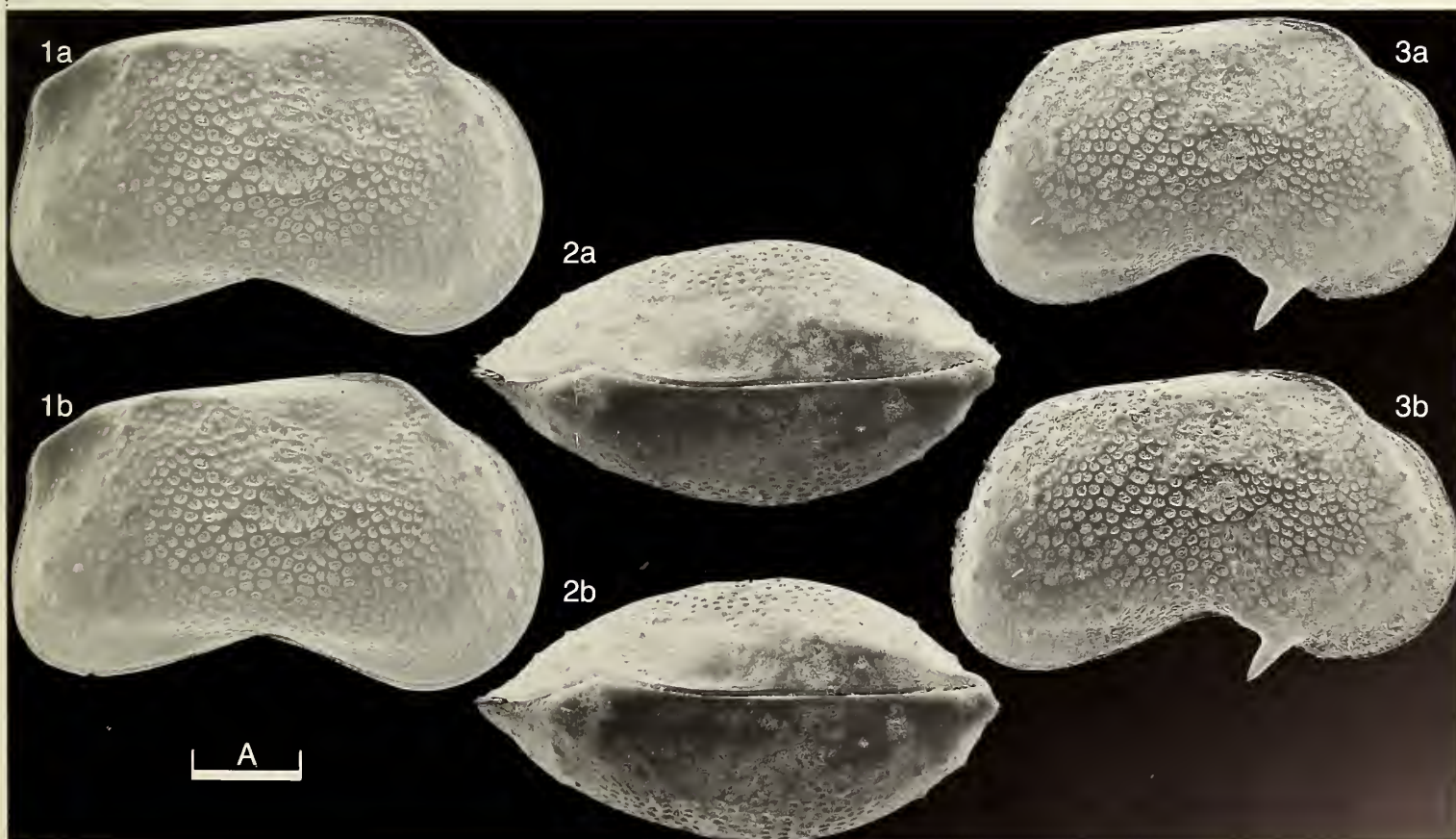
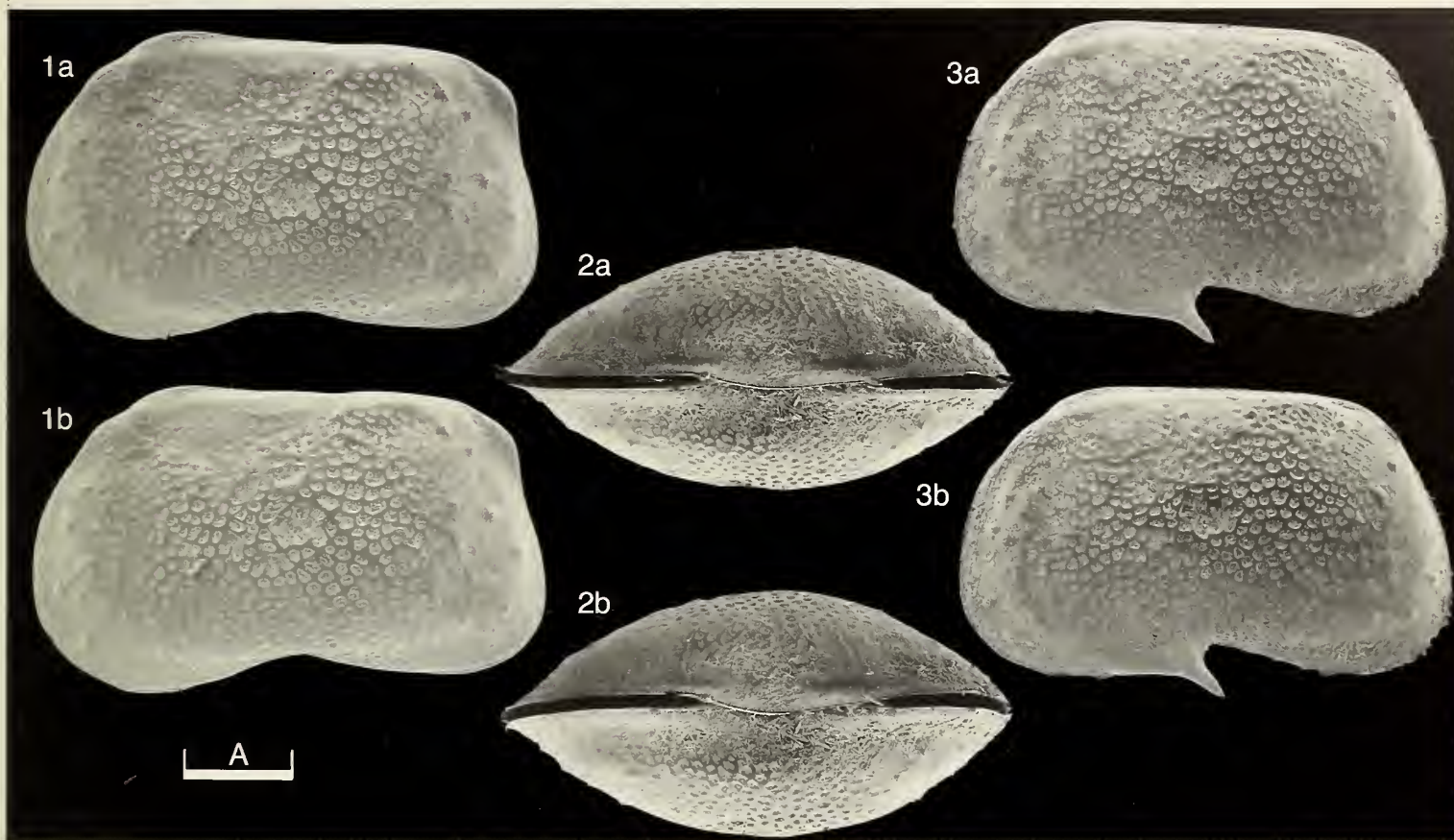
Distribution: Recent, freshwater: Lake Baikal.

Acknowledgements: Both the visit of the senior author to Lake Baikal and the one of the second author to Belgium were financed by the bilateral agreement between the Belgian Government and the Siberian branch of the Russian Academy of Sciences, presently being incorporated in BICER. J. Cillis and C. Behen (Brussels, Belgium) offered technical assistance with the SEM images and with the line drawings respectively. Dr K. Wouters (Brussels) and Dr D. Danielopol (Mondsee) read the manuscript and suggested improvements.

Explanation of Plate 19, 44

Fig. 1, ♀ RV, ext. lat. (**OC1605**, 905 µm long); fig. 2, ♀ car., dors. (**OC1603**, 966 µm long); fig. 3, ♂ RV, ext. lat. (**OC1601**, 845 µm long).

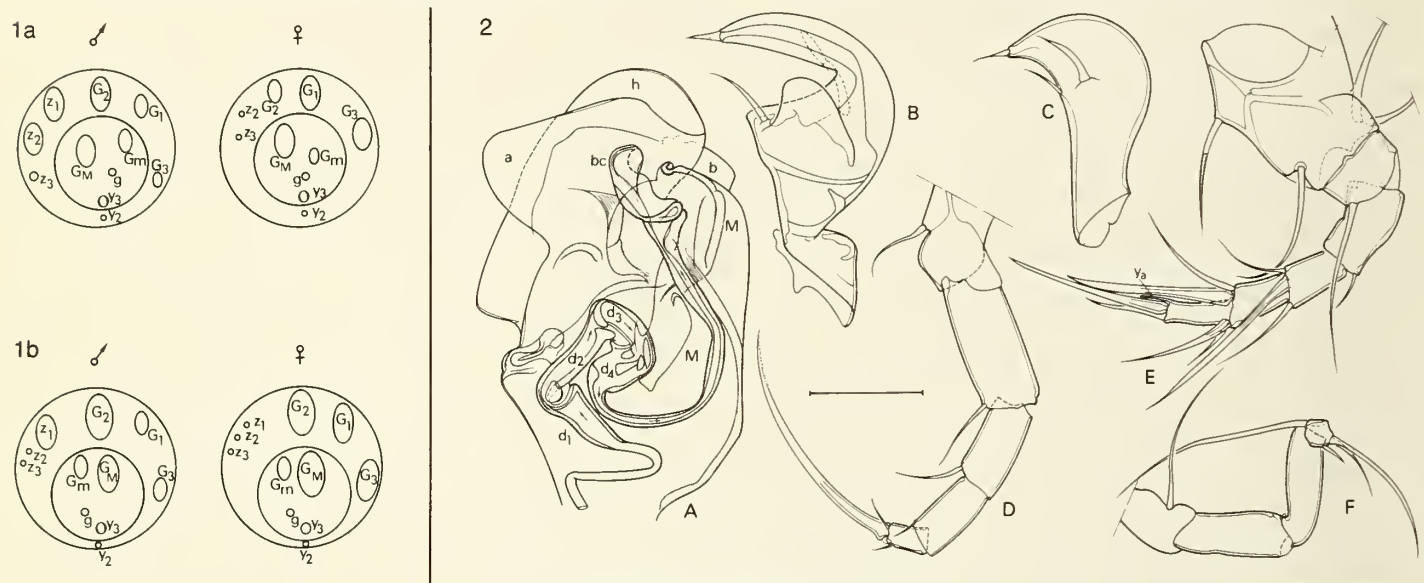
Scale A (200 µm; ×75), figs. 1–3.





Text-fig. 1, schematic representation of sexual dimorphism in distal chaetotaxy of terminal antennal segments (right antenna, apical view) in *Pseudocandona ceratina* Mazepova (1a) and *P. gajewskajae* Bronstein (1b) (see also Martens *et al.*, *Stereo-Atlas Ostracod Shells*, 19, 49–56, 1992). Large circles represent circumferences of segment, small circles are setae and aesthetascs, ovals are claws. For full explanation, see Martens (*Bijdr. Dierk.*, 57, 183–190, 1987).

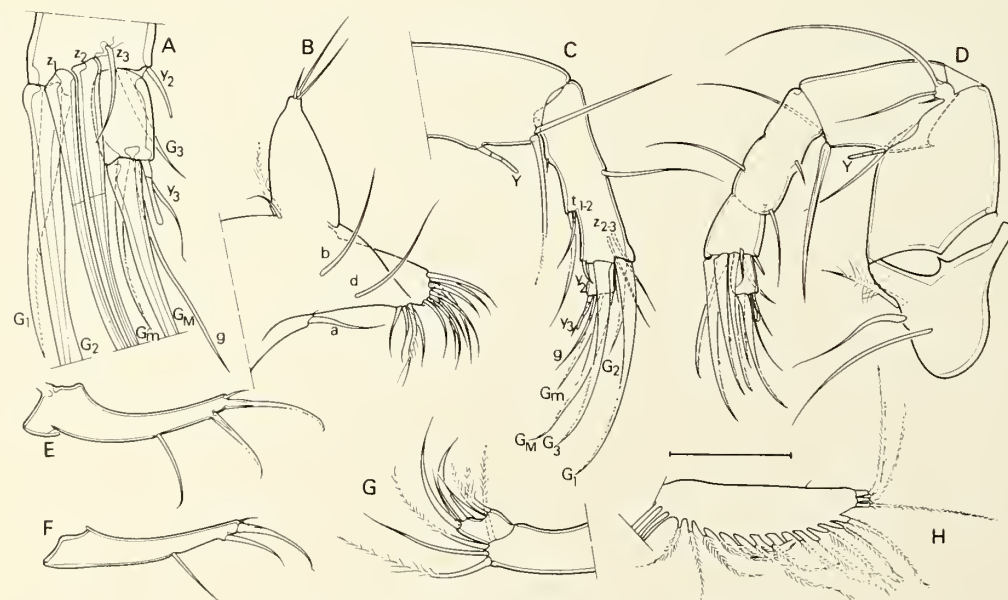
Text-fig. 2a–f, ♂ appendages (OC1601): a, hemipenis; b, c, prehensile palps; d, T1; e, A1; f, T2. Scale bar = 78 µm.



Explanation of Plate 19, 46

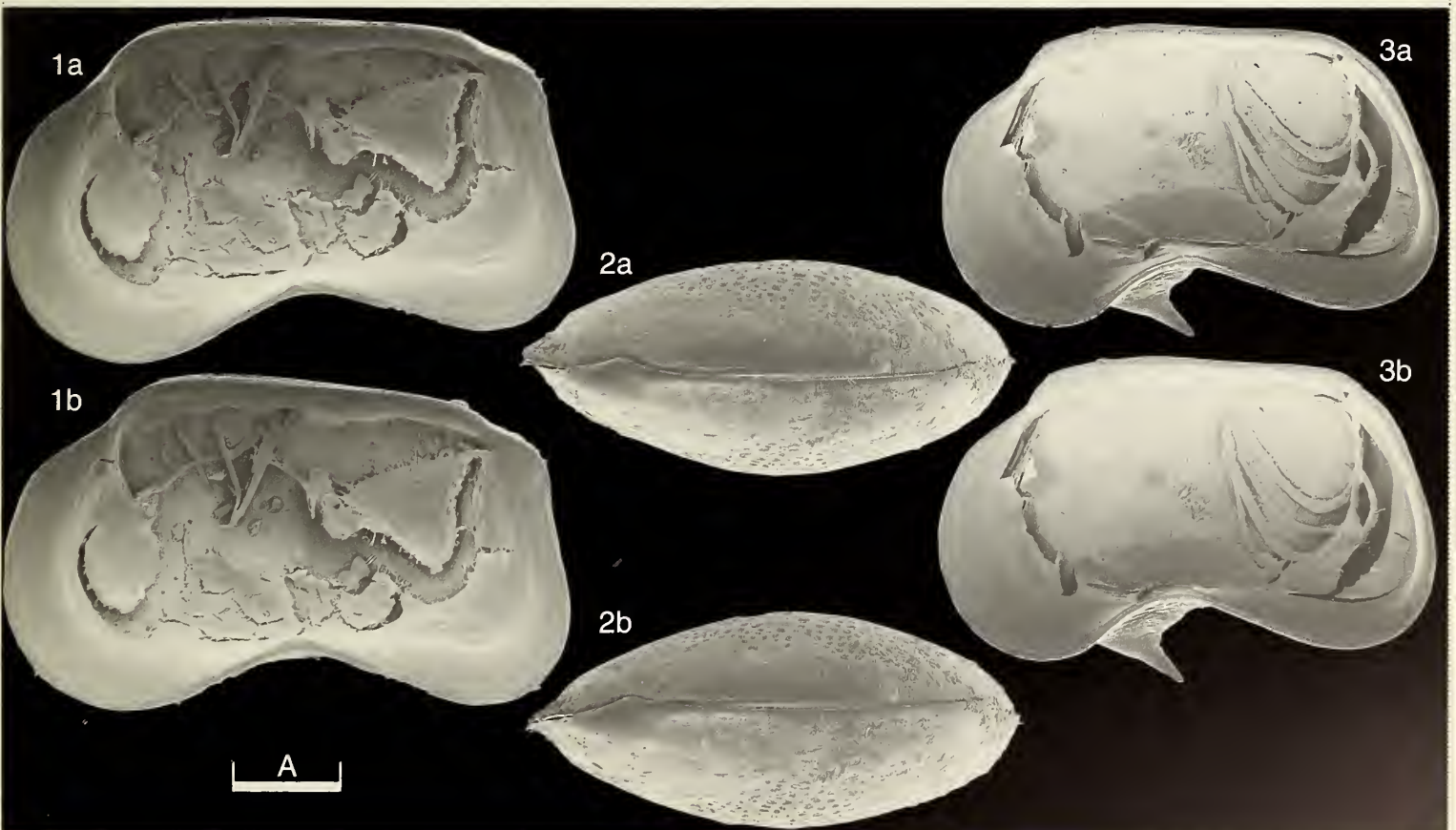
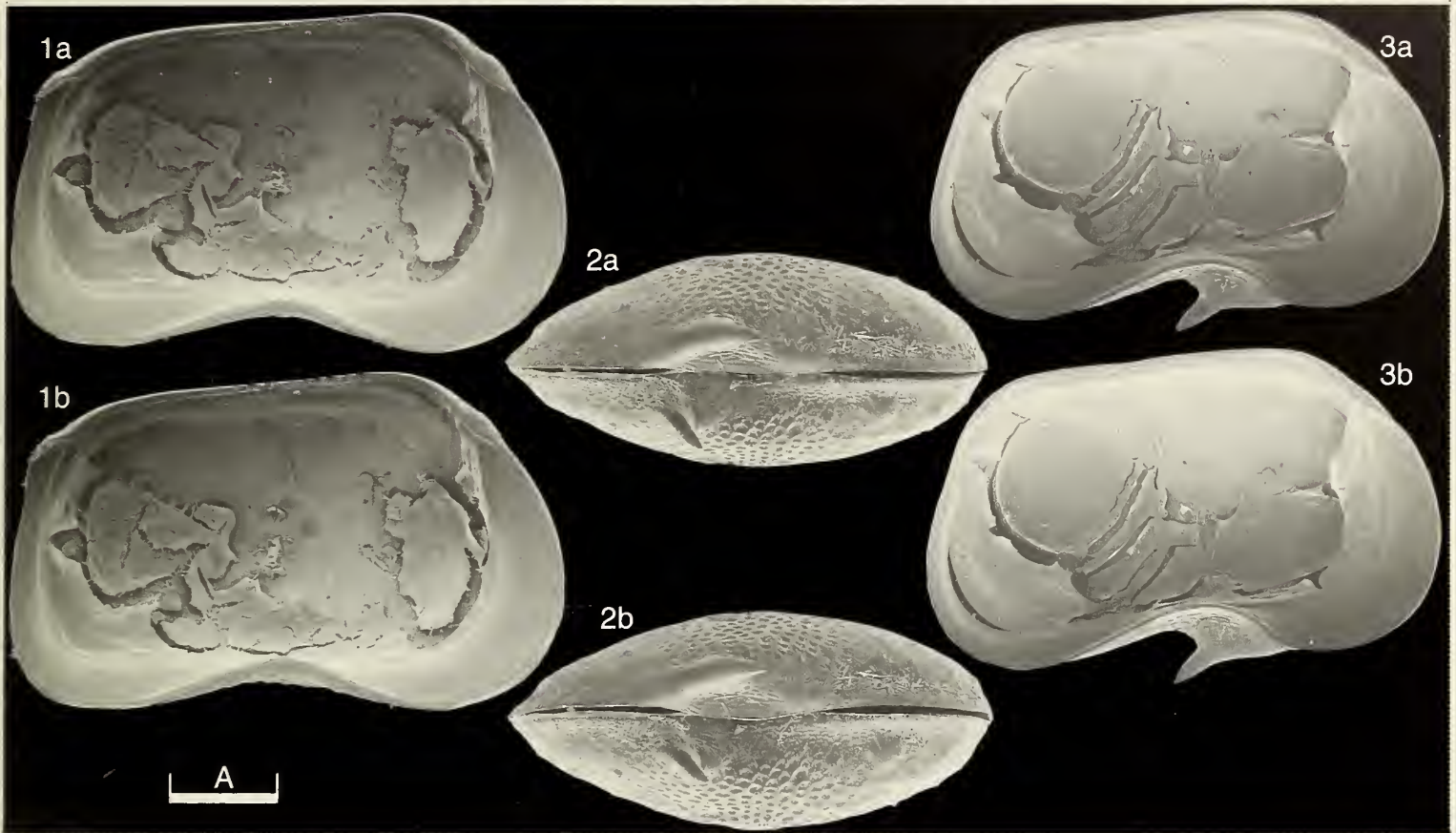
Fig. 1, ♀ LV, int. lat. (OC1606, 948 µm long); fig. 2, ♂ car., vent. (OC1600, 845 µm long); fig. 3, ♂ LV, int. lat. (OC1602, 862 µm long). Scale A (200 µm; ×75), figs. 1–3.

Text-fig. 3, appendages: a, A2, detail of distal chaetotaxy (OC1601); b, ♀, Mx2 (OC1605); c, ♀, A2 (OC1605); d, ♂, A2 (OC1601); e, ♀, furca (OC1605); f, ♂, furca (OC1601); g, ♀, Mx1-palp (OC1605); h, ♀, Mx1, respiratory plate (OC1605). Scale bars = 146 µm for 3e, f, h; 78 µm for 3b–d, g; 29 µm for 3a.



Explanation of Plate 19, 48

Fig. 1, ♀ RV, int. lat. (OC1606, 948 µm long); fig. 2, ♂ car., dors. (OC1599, 862 µm long); fig. 3, ♂ RV, int. lat. (OC1602, 845 µm long). Scale A (200 µm; ×75), figs. 1–3.



ON *PSEUDOCANDONA GAJEWSKAJAE* BRONSTEIN

by Koen Martens, Irina Noskova & Galina Mazepova
(Royal Belgian Institute of Natural Sciences, Brussels &
Limnological Institute, Siberian Branch of the Russian Academy of Sciences, Irkutsk)

Pseudocandona gajewskajae Bronstein, 1947

1947 *Pseudocandona gajewskajae* sp. nov. G. Bronstein, *Fauna U.S.S.R.* 2(1), 202–203, 317–318, fig. 115.

1969 *Alatocandona gajewskajae* (Bronstein); G. Carbonnel, *Docums Lab. Géol. Fac. Sci. Lyon*, 32(1), 28.

1990 *Pseudocandona gajewskajae* Bronstein; G. Mazepova. *Rakuschkovy ratschki (Ostracoda) Baikala*, 247–250, fig. 104, “Nauka” (Sib. Otdel. Akad. Nauk S.S.S.R.), Novosibirsk.

Type specimens: Repository unknown; however, Bronstein’s (*op. cit.*) original description and illustration are adequate to define the species.

Type locality: Lake Baikal, southern basin, Bol’shie Koty (approx. lat. 52° 20’ N, long. 105° E), on stone surface, depth approx. 1.0 m.

Figured specimens: Royal Belgian Institute of Natural Sciences (Brussels, Belgium), Ostracod Collection: **OC1590** (♀: Pl. 19, 50, figs. 1, 4; 19, 52, figs. 4, 5), **OC1592** (♀: Pl. 19, 50, figs. 2, 3), **OC1593** (♀: Pl. 19, 52, figs. 1, 2, 3, 6), **OC1594** (♂: Pl. 19, 54, figs. 2, 3; text-figs. 1e, 2c), **OC1596** (♂: Pl. 19, 56, fig. 2), **OC1597** (♂: Pl. 19, 54, fig. 1; 19, 56, fig. 1; text-figs. 1a–d, f–k, 2a, d–h), **OC1598** (♀: text-fig. 2b). All collected from the general vicinity of the type locality.

Diagnosis: Medium-sized candonid, with nearly straight dorsal and ventral sides and with asymmetrically rounded anterior and posterior margins. Both sexes with very striking, hollow lateral alae, about $\frac{1}{3}$ – $\frac{1}{2}$ the total length, in dorsal view each as wide as rest of valve. Entire external surface set with a network of strong ridges. LV overlapping RV on all four sides, consequently being larger, and especially higher than RV. LV further with a well developed, submarginal inner list along anterior, ventral and posterior margins. Six central muscle scars present: 2 elongated ones on the dorsal sides, 2 pairs of nearly rounded scars below.

Antennula with 2 long natatory setae, and few reduced ones. Male antenna with subterminal segment only $1\frac{1}{2}$ times as long as wide, undivided. Sexual dimorphism in apical chaetotaxy of antenna apparent: only z1 a large claw and both G1 and G3 small claws in males; 3 z-setae present and G1–3 large claws in females. Hemipenis with lobe “a” bluntly pointed, lobe “h” swollen and produced; internal anatomy with post-labyrinthal spermiductus showing an extra coil in relaxed condition; part “e” (= bursa copulatrix?) cup-shaped. Both prehensile palps consisting of one segment, asymmetrical: right palp wide and with 2 claw-like lateral processes; left palp narrower, straight over most of length, with one stout claw-like lateral process and one less solid process.

Explanation of Plate 19, 50

Fig. 1, ♀ car., dors. (**OC1590**, 776 µm long); fig. 2, ♀ LV, ext. lat. (**OC1592**, 776 µm long); fig. 3, ♀ RV, ext. lat. (**OC1592**, 741 µm long); fig. 4, ♀ car., vent. (**OC1590**, 776 µm long). Scale A (200 µm; ×70), figs. 1–4.

Remarks: Mazepova (1990, *op. cit.*, 472 pp.) followed Bronstein (1947, *op. cit.*, 339 pp.; English translation, 1988, 470 pp.) in distinguishing 3 candonid genera in the endemic ostracod fauna of Lake Baikal: species with smooth valves (or with only weak pits in the centre of the valves) and with the endopodite of the male antenna with four segments and male bristles (*Candona*—49 species); species with strongly sculptured valves and with the endopodite of the male antenna four-segmented, carrying male bristles (*Baikalocandona*—11 species); and species with strongly sculptured valves and with the endopodite of the male antenna three-segmented and without male bristles (*Pseudocandona*—28 species). Apart from the candonids, the fourth (and largest) endemic ostracod lineage in Lake Baikal belongs to *Cytherissa* (47 species).

The allocation of a number of the endemic Baikal candonids to these three genera has been questioned by Danielopol (1978, *Sber. öst. Akad. Wiss.*, (1), 187(1–5), 1–166) and by Broodbakker & Danielopol (1982, *Bijdr. Dierk.*, 52, 103–120). Carbonnel (1969, *op. cit.*) created the genus *Alatocandona* in which he included *P. gajewskajae*.

The history of the genus *Pseudocandona* Kaufmann, 1900 is complicated. For a discussion and a redefinition, see Danielopol (1978, *op. cit.*); later discussions are in Danielopol (1978, *Int. J. Speleol.*, 10, 57–71; and 1982, *Bull. Mus. natn. Hist. nat. Paris*, (4:4), 3–4, 369–396) and in Broodbakker & Danielopol (1982, *op. cit.*). According to these authors, the main features characterizing this genus are the flat “M” part, with weakly sclerotized distal part of the hemipenis and aspects of the sexual dimorphism in the distal chaetotaxy of the antenna. Bronstein (1947/1988, *op. cit.*) was of the opinion that both European and Baikalian *Pseudocandona* have no sexual dimorphism in the antenna (neither in the divided penultimate segment, nor in the male bristles), and concluded that there was a close relationship between both faunas. Broodbakker & Danielopol (1982, *op. cit.*) argued against this, stating that some groups within the genus clearly show a sexual dimorphism in other features of the distal chaetotaxy of this limb. Such differences are now also illustrated from two Baikalian species (*P. gajewskajae*, herein, and *P. ceratina* Mazepova (see K. Martens, I. Noskova & G. Mazepova, *Stereo-Atlas Ostracod Shells* 19, 41–48, 1992). However, it becomes clear from the present redescrptions, different patterns in antennal chaetotaxy can also be found within the Baikalian fauna. This must indicate that the *Pseudocandona* problem requires more than a simple comparison between European and Baikalian species, in order to solve it. It would seem that the apparent polyphyletic nature of *Pseudocandona* can only be investigated by thoroughly re-examining all European and Baikalian representatives, with special reference to antennal chaetotaxy and internal anatomy of the hemipenes. The pattern of distal chaetotaxy presently described for the two Baikalian taxa here, may indeed also be present in other species of the Candoninae.

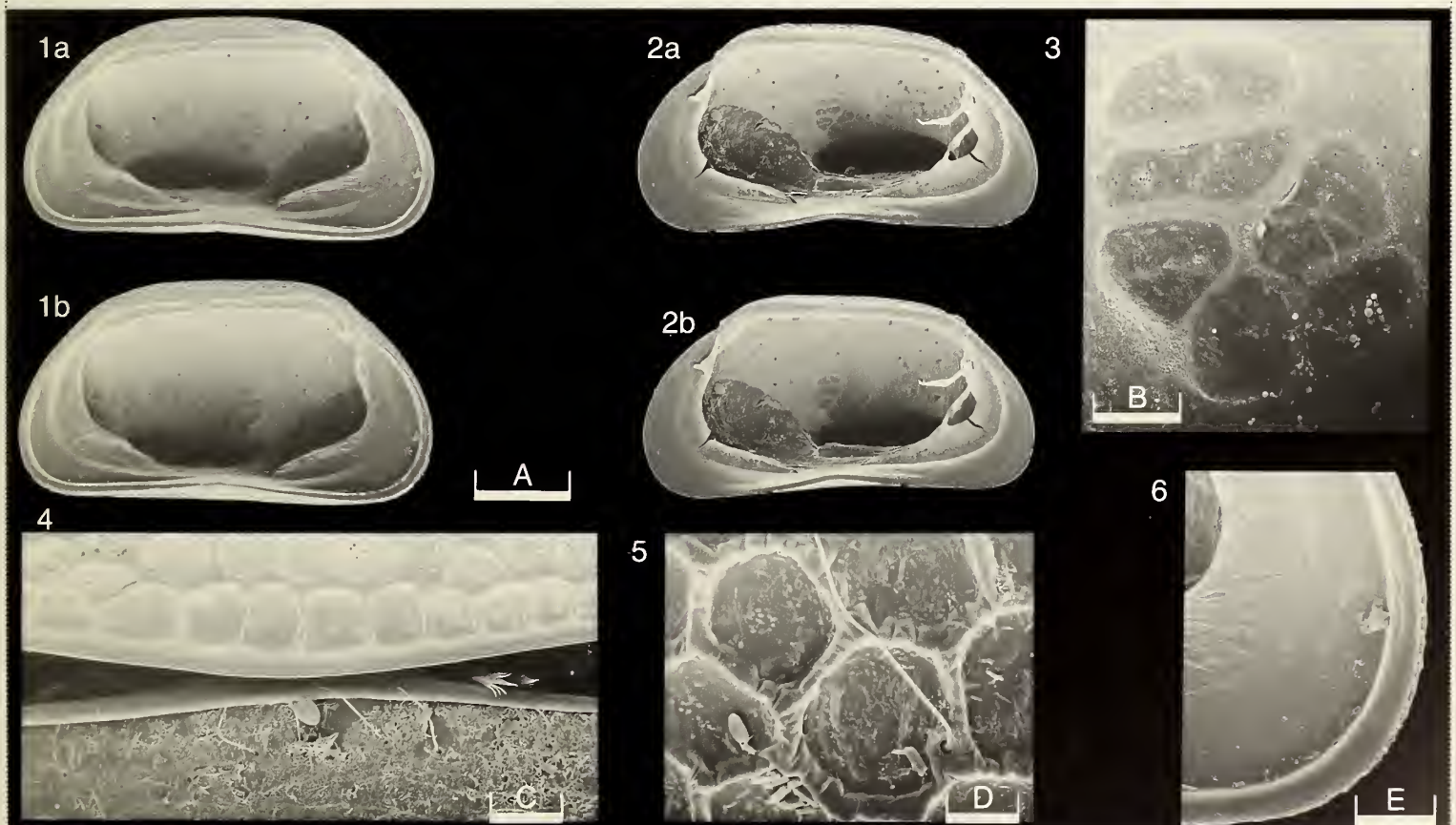
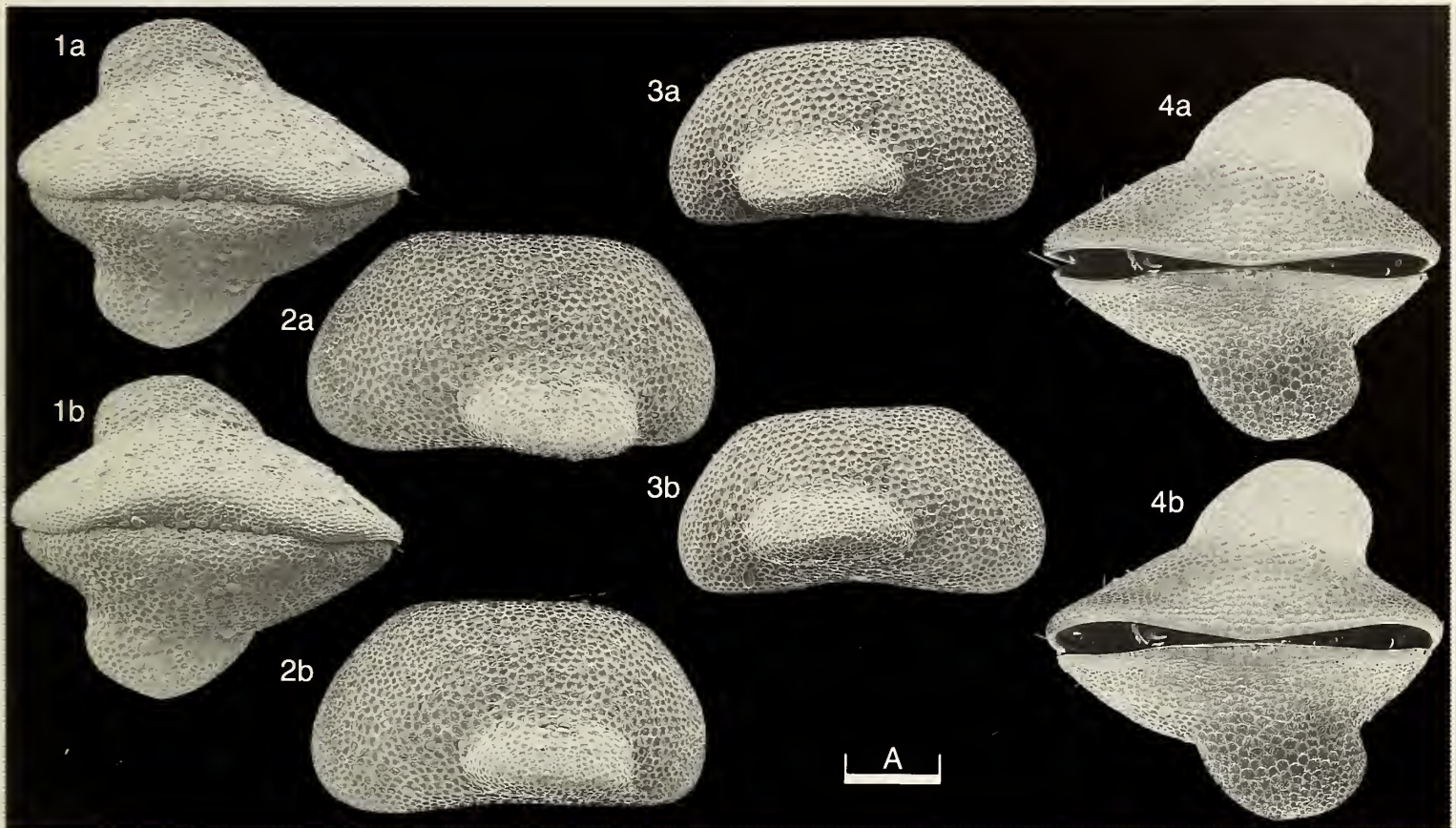
Distribution: Recent, freshwater, Lake Baikal.

Acknowledgement: See under *Stereo-Atlas of Ostracod Shells* 19, 43, 1992.

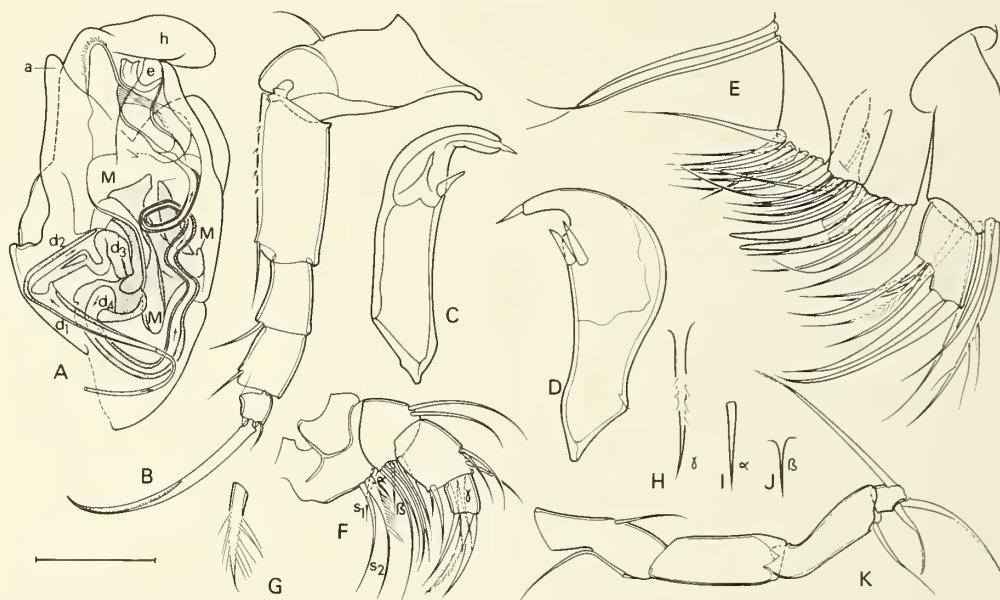
Explanation of Plate 19, 52

Fig. 1, ♀ LV, int. lat. (**OC1593**, 810 µm long); fig. 2, ♀ RV, int. lat. (**OC1593**, 776 µm long); fig. 3, ♀ RV, int. lat., detail of adductor musc. sc. (**OC1593**); fig. 4, ♀ car., vent., detail of overlap (**OC1590**); fig. 5, ♀ car., vent., detail of surface structure (**OC1590**); fig. 6, ♀ LV, int. lat., detail of ant. margin (**OC1593**).

Scale A (200 µm; ×70), figs. 1, 2; scale B (25 µm; ×540), fig. 3; scale C (25 µm; ×425), fig. 4; scale D (5 µm; ×2,200), fig. 5; scale E (50 µm; ×230), fig. 6.



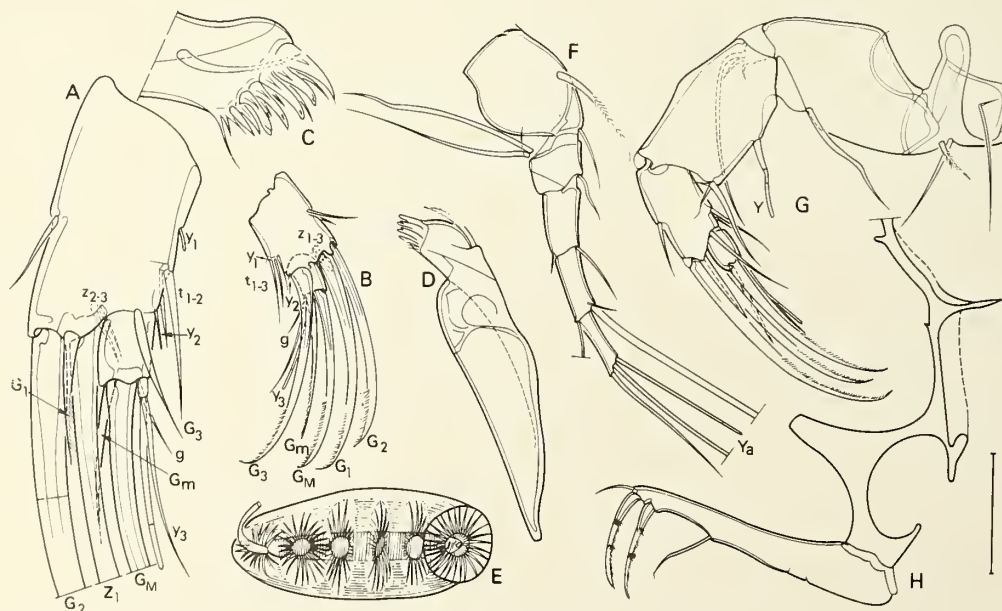
Text-fig. 1a-d, f-k, ♂ appendages (OC1597); 1e, ♂ appendage (OC1594): a, hemipenis; b, T1; c, prehensile palp; d, prehensile palp; e, Mx1; f, Md-palp; g, *idem.*, detail of seta s1; h, *idem.*, detail of gamma-seta; i, *idem.*, detail of alpha-seta; j, *idem.*, detail of beta-seta; k, T2. Scale bar = 78 μ m for figs. 1a-d, f, k; 29 μ m for figs. 1e, g-j.



Explanation of Plate 19, 54

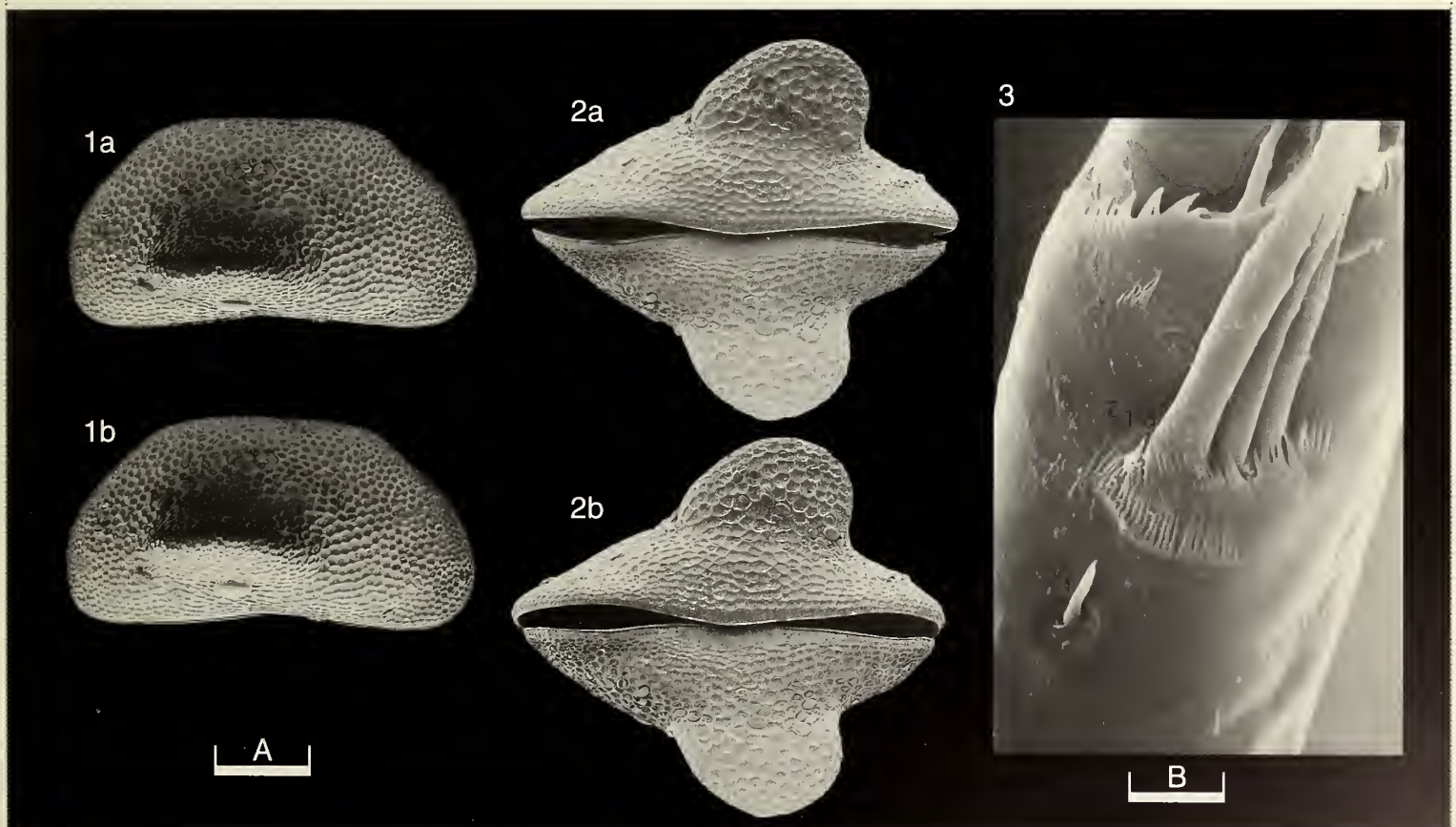
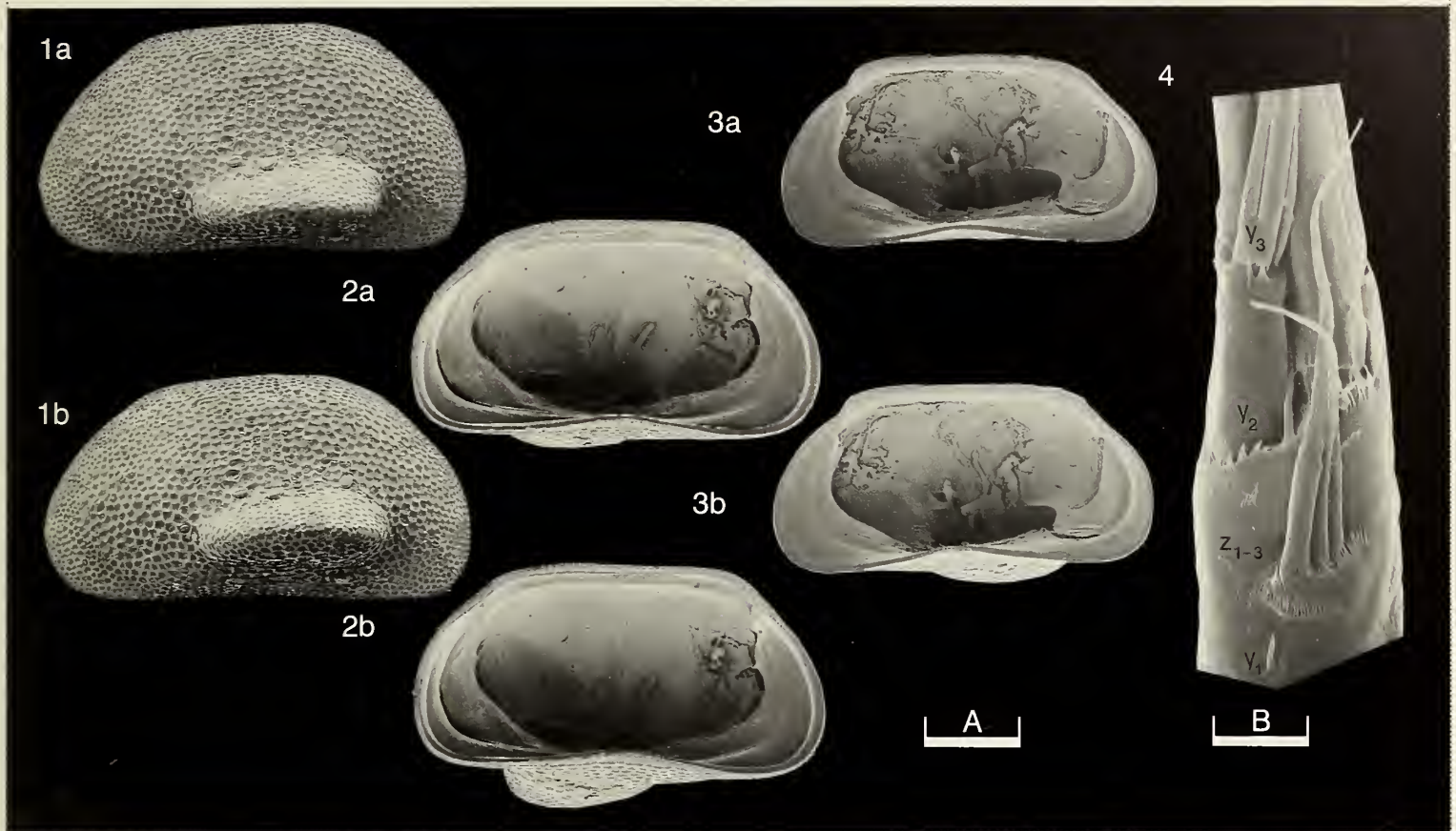
Fig. 1, ♂ LV, ext. lat. (OC1597, 810 μ m long); fig. 2, ♂ LV, int. lat. (OC1594, 793 μ m long), fig. 3, ♂ RV, int. lat. (OC1594, 793 μ m long); fig. 4, ♀ antenna, detail. Scale A (200 μ m; $\times 70$), figs. 1-3; scale B (10 μ m; $\times 1,500$), fig. 4.

Text-fig. 2, appendages: a, ♂, A2, detail of distal chaetotaxy (OC1597); b, ♀, *idem.* (OC1598); c, ♂, Md-coxa, detail (OC1594); d, ♂, Md-coxa (OC1597); e, ♂, Zenker organ (OC1597); f, ♂, A1 (OC1597); g, ♂, A2 (OC1597); h, ♂, furca and furcal attachment (OC1597). Scale bar = 146 μ m for fig. 2e; 78 μ m for fig. 2b, d, f-h; 29 μ m for fig. 2a, c.



Explanation of Plate 19, 56

Fig. 1, ♂ RV, ext. lat. (OC1597, 774 μ m long), fig. 2, ♂ car. vent. (OC1596, 845 μ m long), fig. 3, ♀ antenna, detail. Scale A (200 μ m; $\times 70$), figs. 1, 2; scale B (5 μ m; $\times 3,000$), fig. 3.



ON *SEMICYTHERURA PULCHRA* (COLES & WHATLEY)

by Michael A. Ayress & Thierry Corregge
(Department of Geology, The Australian National University, Canberra)

Semicytherura pulchra (Coles & Whatley, 1989)

- 1986 *Trinacriacythere cornuta* sp. nov. G. Ciampo, *Boll. Soc. paleont. ital.*, **24**, 103, pl. 15, figs. 1–4, pl. 18, fig. 6.
1988 *Rostrocythere?* sp. R.C. Whatley & M.A. Ayress, *Evolutionary biology of Ostracoda* (Proc. 9th Int. Symp. Ostracoda, Shizuoka, 1985), pl. 1, figs. 2a, b, 3a, b. Kodansha & Elsevier, Tokyo & Amsterdam, etc.
1989 *Mayburya pulchra* gen. et sp. nov. G. Coles & R.C. Whatley, *Revta esp. Micropaleont.*, **21**, 87, pl. 1, figs. 5–7.

Holotype: Department of Earth Sciences, University of Naples, Italy no. **COC n. 502**.

Type locality: Falconara section, Sicily. *Globorotalia continuosa* Zone, Tortonian, Late Miocene.

Figured specimens: National Museum of Victoria, Melbourne, Australia nos. **NMVP197914** (LV: Pl. 19, 58, figs. 1–5) and **NMVP197915** (RV: Pl. 19, 60, figs. 1–4).

Both from off east coast of Australia: **NMVP197914** from Tasman Sea (lat. 29° 18.6' S, long. 154° 4.534' E), water depth 1,989 m, Bureau of Mineral Resources Rig Seismic core sample 71GC026, interval 19–20 cm; **NMVP197915** from Coral Sea (lat. 18° 07' S, long. 147° 36' E), water depth 1,007 m, Vema core sample V24-160, interval 35–36 cm. Quaternary.

Explanation of Plate 19, 58

Figs. 1–5, LV (**NMVP197914**, 362 µm long); fig. 1, ext. lat.; fig. 2, int. lat.; fig. 3, int., ant. dors.; fig. 4, post. hinge; fig. 5, musc. sc. Scale A (100 µm; ×160), fig. 1; scale B (100 µm; ×150), fig. 2; scale C (50 µm; ×390), fig. 3; scale D (20 µm; ×1,150), fig. 4; scale E (25 µm; ×800), fig. 5.

Diagnosis: A species of *Semicytherura* with a regularly punctate median area but microreticulate, micropunctate or smooth towards free margins. Four short anterior marginal spines and a longer postero-ventral spine in LV; the latter spine locates between two accommodating knobs on selvage in RV when valve is closed. “V”-shaped ventro-lateral ridge continuous with prominent antero- and postero-dorsal marginal ribs. Internal morphology characteristic of genus.

Remarks: Previous authors have placed this species within the Bythocytheridae having been strongly influenced by its artificial similarity to *Pseudocythere*. Well preserved specimens, shown here for the first time, clearly show four adductor scars and a complex inner lamella characteristic of *Semicytherura*. None of the previously described specimens from Italy or from the deep sea have had the proximal part of the calcarious inner lamella preserved.

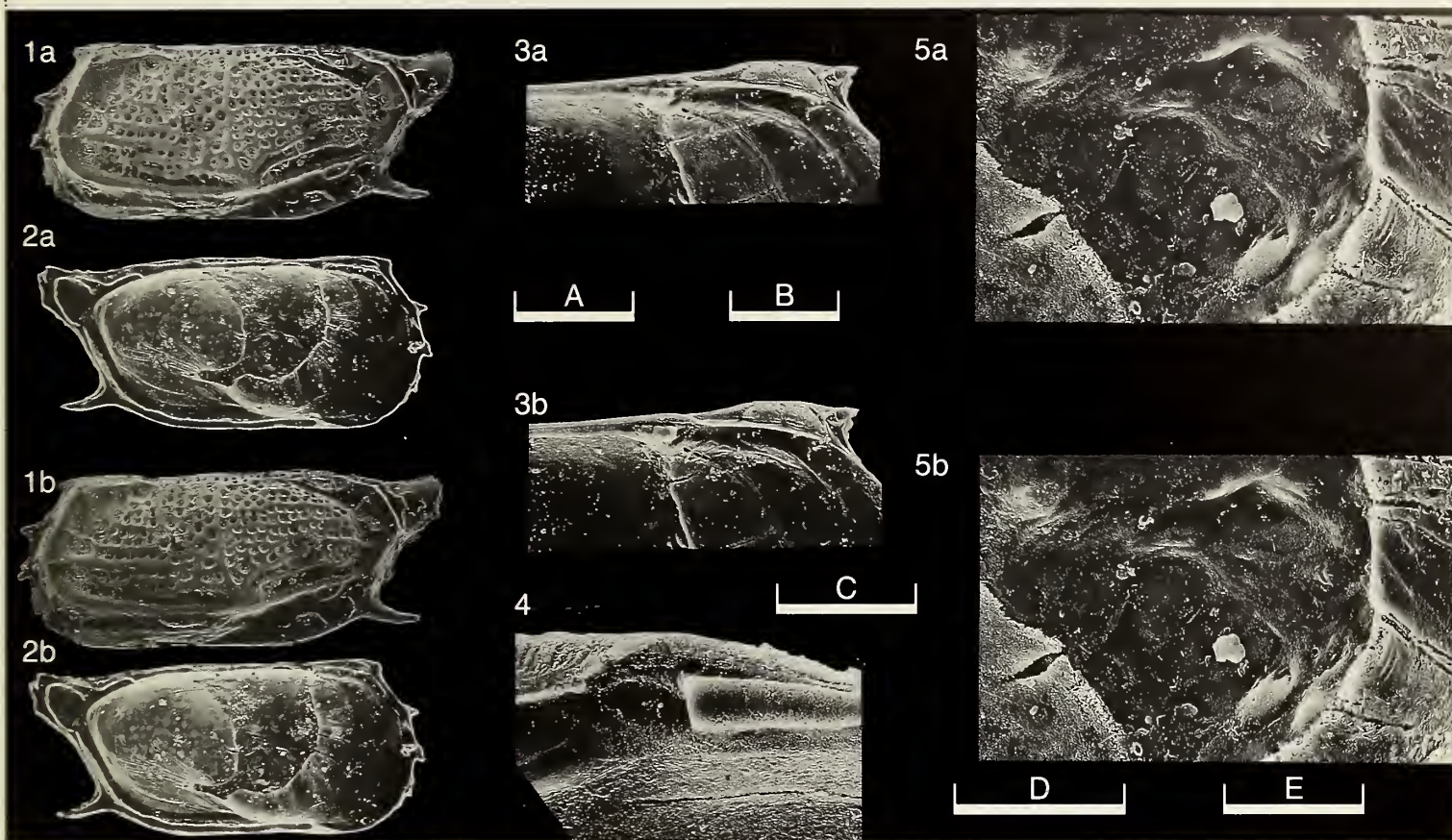
Ciampo's (1986, *op. cit.*) name cannot be used for this species as it is a secondary junior homonym of *Semicytherura cornuta* (Brady) (1868, *Trans. Linn. Soc. Lond.*, **26**, 445).

Distribution: Late Miocene of Sicily (Ciampo, 1986); Late Oligocene to Recent of the North Atlantic (Coles & Whatley, 1989), Quaternary of the E Indian Ocean and SW Pacific (Whatley & Ayress, 1988; and herein).

Acknowledgements: We would like to thank the Electron Microscope Unit of ANU for their assistance and use of their scanning electron microscopes. Prof. R.C. Whatley (UCW, Aberystwyth) commented helpfully on the manuscript.

Explanation of Plate 19, 60

Figs. 1–4, RV (**NMVP197915**, 369 µm long); fig. 1, post. vent. selvage; fig. 2, ext. lat.; fig. 3, int. lat.; fig. 4, ant. dors. Scale A (20 µm; ×600), fig. 1; scale B (100 µm; ×133), fig. 2; scale C (100 µm; ×160), fig. 3; scale D (50 µm; ×480), fig. 4.



ERRATA

This paper appeared in *A Stereo-Atlas of Ostracod Shells* **18** (pt. 2), 81-84, 1991 with pls. **18**, 82, 84 unfortunately printed upside down. It is reprinted here with the plates in the correct orientation. The original pagination is retained should the subscriber wish to replace the original version with this correct copy.

ON *DALEIELLA CORBULOIDES* (JONES & HOLL)

by Robert F. Lundin & Lee E. Petersen
(Arizona State University, Tempe & Anardarko Petroleum Corporation, Houston, U.S.A.)

Genus *DALEIELLA* Bouček, 1937

Type-species (by original designation): *Cythere corbuloides* Jones & Holl, 1869

Diagnosis: Large, strongly inequivalved Pachydomellidae(?) with a perimarginal carina on the posteroventral, extending to the ventral surface and even to the anteroventral surface in some species, part of the admarginal surface of one or both valves. Overreach of the right by the left valve strong around entire periphery of the right valve, but especially strong dorsally and posteroventrally. Hinge parallel to longitudinal axis of valve. Shell wall without tubules or pore canals. Carapace width greater than height. Dimorphic(?) by posteriorward displacement of maximum width in heteromorph (presumed female).

Remarks: This genus is similar in general appearance to pachydomellids but the combination of characters including the perimarginal carinae, strong overreach, great carapace width, orientation of the hinge and absence of tubules and pore canals distinguish it from the most similar genera *Microcheilinella* Geis, 1933, *Tubulibairdia* Swartz, 1936 and *Newsomites* Morris & Hill, 1952.

The genus is represented by the type-species, *D. corbuloides* (Jones & Holl, 1869), from the Silurian of Great Britain and Podolia and the following species from the Silurian of Podolia and/or the East Baltic area: *D. acutifinis* Neckaja, 1960, *D. acutifiniiformis* = *M. acutifiniiformis* Abushik, 1979, and *D. ianica* Neckaja, 1960. The existence of the diagnostic generic characters in *D. triangularis* Bouček, 1937 have not been verified and *D. americana* Morris & Hill, 1952 is most probably a *Krausella* Ulrich, 1894. *D. ? canadensis* Copeland, 1962, *D. caleyi* Copeland, 1973 and *D. deubeli* Zagora, 1967 have little in common with the type-species and certainly do not belong to *Daleiella*.

The placement of *Daleiella* and other similar genera without tubules in the Pachydomellidae Berdan & Sohn, 1961 is open to question and would necessitate redefinition of that family. Discussion of suprageneric systematics of this large group of superficially similar genera is beyond the scope of this paper. It is clear, however, that if the presence of tubules is considered to be of less than familial significance, *Daleiella* can be placed with *Tubulibairdia*, *Microcheilinella*, *Newsomites* and others in one family of the Bairdiacea.

Explanation of Plate 18, 82

Figs. 1–3, car. (ASU X-128, 959 μ m long): fig. 1, ext. rt. lat.; fig. 2, ext. post.; fig. 3, ext. dors. Fig. 4, car., ext. lt. lat. (ASU X-129, 1071 μ m long).

Scale A (200 μ m; $\times 53$), figs. 1–3; scale B (200 μ m; $\times 48$), fig. 4.

Daleiella corbuloides (Jones & Holl, 1869)

1869 *Cythere corbuloides* sp. nov. T.R. Jones & H.B. Holl, *Ann. Mag. nat. Hist.*, (4), 3, 211, pl. 15, figs. 4, 5.

1887 *Xestoleberis corbuloides* (Jones & Holl); T.R. Jones, *Ann. Mag. nat. Hist.*, (5), 19, 410.

1892 *Xestoleberis corbuloides* (Jones & Holl); J. Smith, *Trans. nat. Hist. Soc. Glasg.*, 3, 158.

1934 *Microcheilinella corbuloides* (Jones & Holl); R. S. Bassler & B. Kellett, *Spec. Pap. geol. Soc. Am.*, 1, 412.

1937 *Daleiella corbuloides* (Jones & Holl); B. Bouček, *Mém. Soc. r. Sci. Bohême*, 1936(2), 7.

1952 *Daleiella corbuloides* (Jones & Holl); R. W. Morris & B. W. Hill, *Bull. Am. Paleont.*, 34, 13.

1960 *Tubulibairdia? corbuloides* (Jones & Holl); I.G. Sohn, *Prof. Pap. U.S. geol. Surv.*, 330-A, 75.

1961 *Daleiella corbuloides* (Jones & Holl); R.H. Shaver, *Treatise on Invertebrate Paleontology*, Q, 385, fig. 310A, 5.

1979 *Microcheilinella mukschensis* sp. nov. A.F. Abushik, *Ezheg. vses paleont. Obsch.*, 22, 51, pl. 3, figs. 1, 2.

1991 *Daleiella [sic] corbuloides* (Jones & Holl); R.F. Lundin, L.E. Petersen & D.J. Siveter, *J. Micropalaeont.*, 9 (2 for 1990), 179, pl. 1, figs. 5, 6.

Lectotype: Designated herein. British Museum (Nat. Hist.) no. I2058; adult carapace. Jones & Holl 1869, pl. 15, figs. 4a–e.

Type locality: “Croft’s Quarry,” 0.5 km W of Malvern, Hereford & Worcester, England; approximately Nat. Grid Ref. SO 757 464, lat. 52° 08’ N, long. 2° 18’ W. Much Wenlock Limestone Formation, Wenlock Series, Silurian.

Figured specimens: Department of Geology, Arizona State University (ASU), nos X-128 (Pl. 18, 82, figs. 1–3), X-129 (car.: Pl. 18, 82, fig. 4), X-195 (car.: Pl. 18, 84, fig. 6), X-196 (car.: Pl. 18, 84, fig. 5). British Museum (Nat. Hist.), no. I2058 (lectotype, car.: Pl. 18, 84, figs. 1–4).

The lectotype and ASU X-195 are from the type locality. ASU X-128 and X-129 are from Harley Hill (A458) road cutting, 1.2 km NW of Much Wenlock, Shropshire, England (Nat. Grid Ref. SJ 6103 0036) and ASU X-196 is from an exposure along path just above old railway track, S side of River Severn and about 400 m W of Browsers Brook, Benthall Edge, Shropshire (Nat. Grid Ref. SJ 6635 0355); all three from Farley Member, Coalbrookdale Formation, Wenlock Series.

Diagnosis: *Daleiella* with a short perimarginal carina on the posteroventral admarginal surface of both valves and on the anteroventral admarginal surface of the right valve. Surface smooth.

Remarks: Possible dimorphism in this species is suggested by differences in the position of greatest width (compare Pl. 18, 84, figs. 5, 6). Data are not available at this time to demonstrate if this difference is due to normal variation or dimorphism because large single-sample populations have not been found.

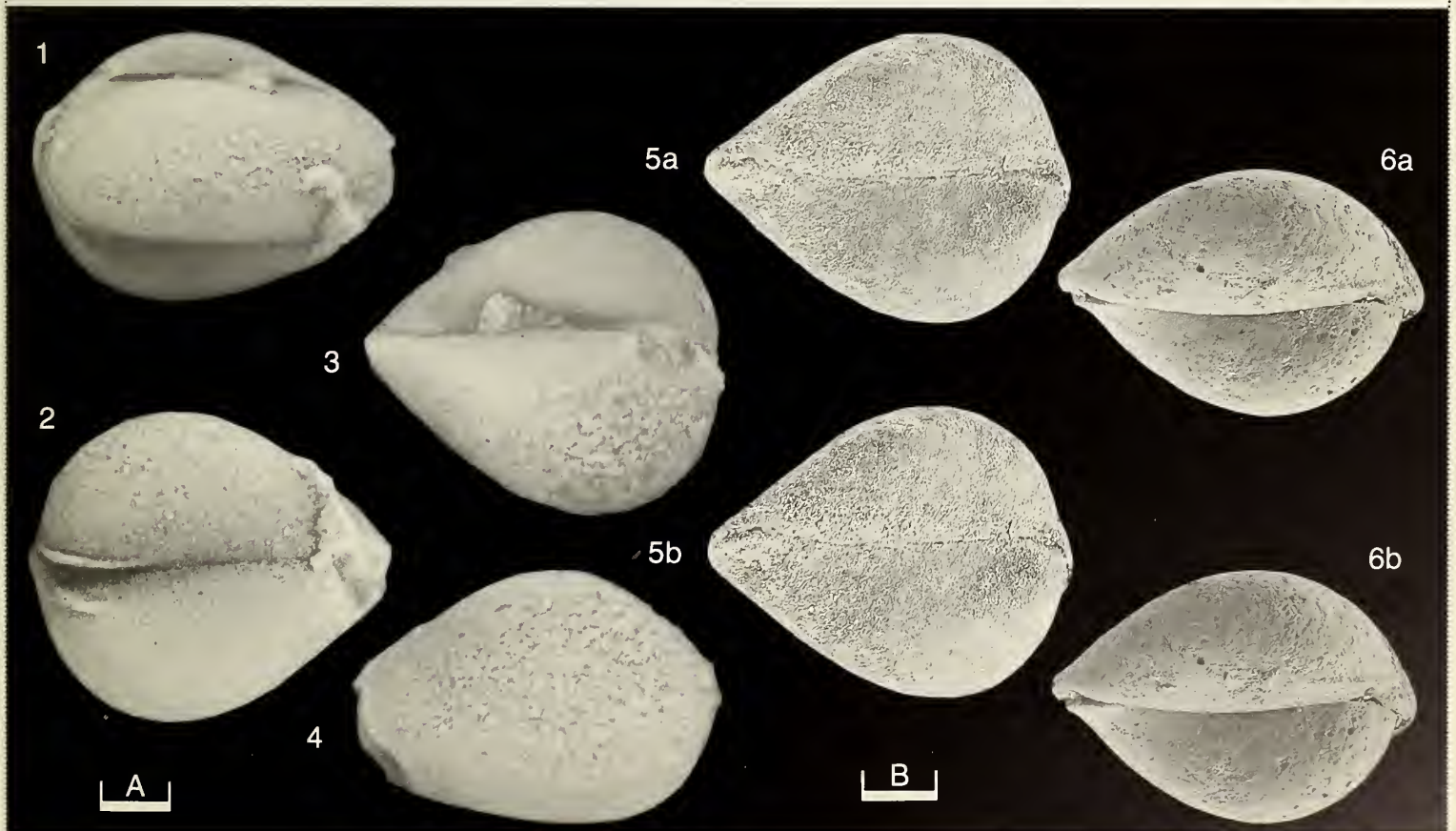
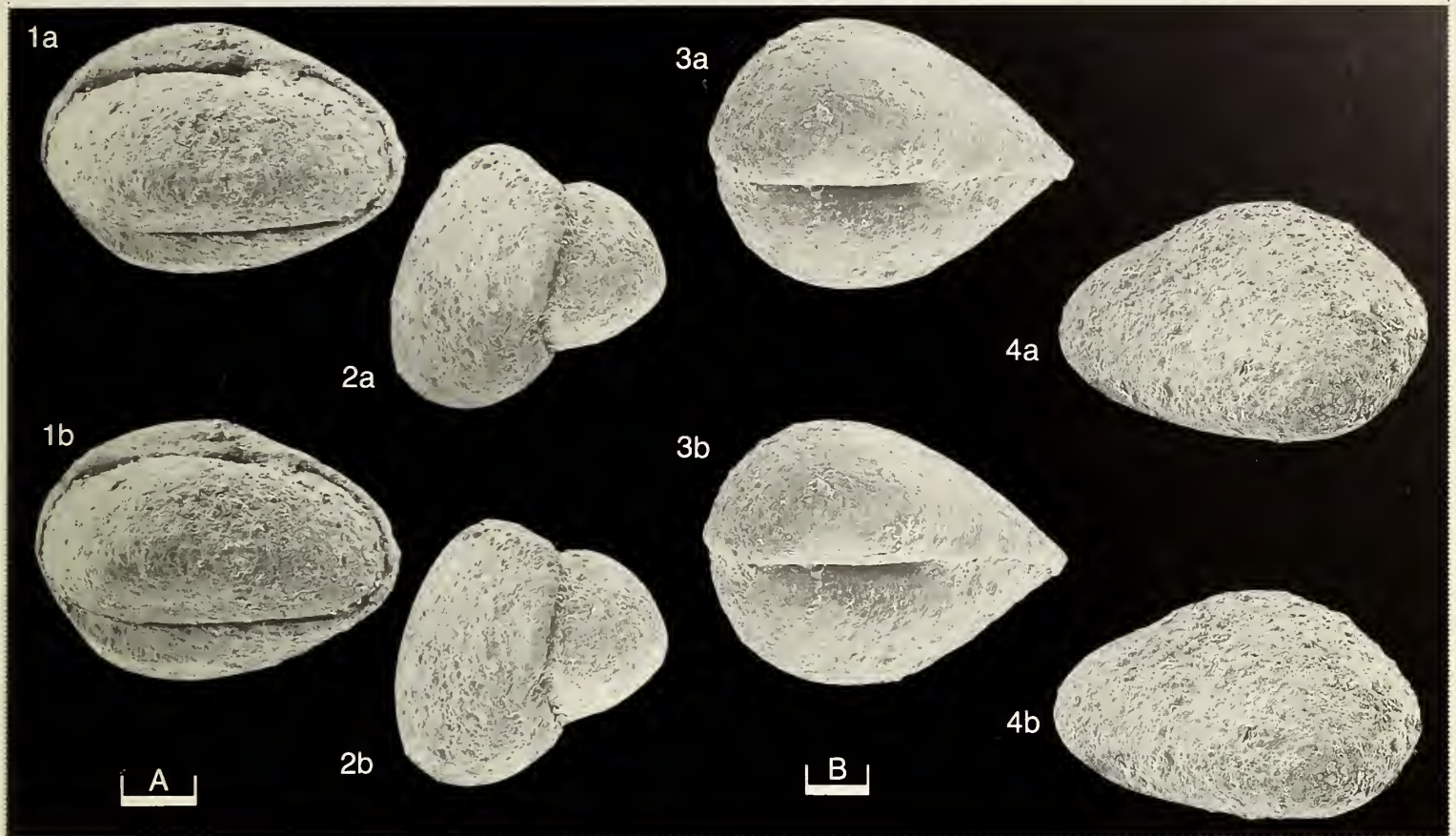
Comparison of Abushik’s (1979) figures and specimens she has supplied, with the British materials described here indicate that *D. corbuloides* is conspecific with *Microcheilinella mukschensis* Abushik, 1979. This extends the known geographic distribution of *D. corbuloides*, which heretofore was known only from the Welsh Borderland and English West Midlands (Lundin *et al.* 1991).
Distribution: Known from many samples of Late Wenlock, Homerian, age and from one sample (locality no. 59 of Lundin *et al.* 1991) of Ludlow, early Gorstian, age in the Welsh Borderland and English West Midlands, and from Late Wenlock stata of Podolia.

Acknowledgements: We gratefully acknowledge the support of NATO, the National Science Foundation (Grant No. EAR-8200816) and the College of Liberal Arts and Sciences, Arizona State University.

Explanation of Plate 18, 84

Figs. 1–4, car. (lectotype, BMNH I2058, 1050 μ m long): fig. 1, ext. rt. lat.; fig. 2, ext. vent.; fig. 3, ext. dors.; fig. 4, ext. lt. lat. Fig. 5, car., ext. vent. (ASU X-196, 1053 μ m long). Fig. 6, car., ext. vent. (ASU X-195, 1053 μ m long).

Scale A (200 μ m; $\times 48$), figs. 1–4; scale B (200 μ m; $\times 49$), figs. 5, 6.





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